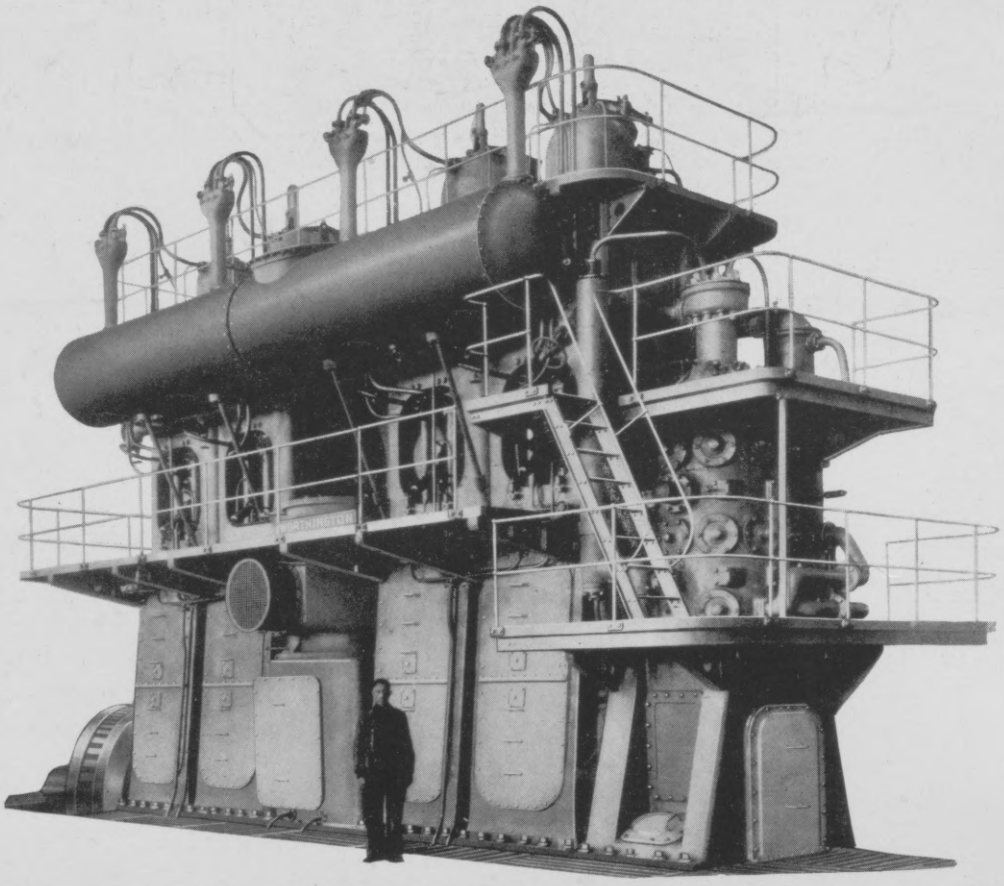
TIFOCO

TRADE MARK REGISTERED

FORGINGS



THE Cylinder Heads used in this Worthington Double Acting Two Cycle Engine are TIFOCO Forgings, forged from Vanadium Steel. This remarkable engine, rated at 2900 B.Hp. is being constructed for installation in one of the United States Shipping Board's Converted Motorships.

Our Metallurgical Department is splendidly manned and equipped to handle the most intricate problem of forging alloy steels, etc.

TITUSVILLE FORGE COMPANY

TITUSVILLE, PA., U. S. A.

Pittsburgh, Pa.—Park Building
Buffalo, N. Y.—Marine Trust Bldg.
Detroit, Mich.—Donovan Bldg.
Indianapolis, Ind.—230 South Penn'a St.
San Francisco, Calif.—Monadnock Bldg.

Sales Offices

New York City—120 Broadway
Chicago, Ill.—549 West Fulton St.
Los Angeles, Calif.—1118 Santa Fe Ave.
Cleveland, Ohio—National Building
Milwaukee, Wis.—First Wisconsin National Bank Bldg.

"MOTORSHIP" for January, 1926. Vol. XI, No. 1. A monthly journal published by MOTORSHIP, at 27 Pearl Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $3.00 per year, domestic; $3.50, foreign.

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GARGOYLE D.T.E. OILS lubricate Diesel Engines in every type of Motorship

M. S. "Camranh," First large French cargo ship equipped with Diesel engines. Owners: La Compagnie des Chargeurs Reunis.

~in cargo ships

The engineer of the "Camranh" —the largest French cargo motorship—can tell a story of Gargoyle D.T.E. Oils from first hand knowledge. His experience with Diesels and their lubricating problems dates back to his engineering experience on submarines and other vessels in the French Navy. He has seen Gargoyle brands work in Diesels. His story may be summed up in six words. "I use them on the 'Camranh'."

This cargo ship of 17,200 tons displacement, lubricated with Gargoyle D.T.E. Oils, averaged a speed of 9.5 knots on its maiden voyage. On the "Camranh" as on all types of Diesel-driven ships where used, these high grade oils have proved—

—an assurance of dependable engine operation

—a sure means of minimizing maintenance bills

—a definite economy in use owing to high lubricating characteristics

Arrangements may be made at any of 300 of the world's leading ports for deliveries of Gargoyle D.T.E. Oils as and when wanted. At these ports you will find a representative of the Vacuum Oil Company ready and capable to discuss your engine requirements, deliveries and prices.

Approved Practice in Diesel Engine Lubrication

The oils to use

For POWER CYLINDERS:
GARGOYLE D.T.E. OIL EXTRA HEAVY—provides the proper body to form and maintain an oil film under the most severe conditions of Diesel engine operation.

For AIR COMPRESSOR CYLINDERS:
GARGOYLE D.T.E. OIL HEAVY X—successfully meets the conditions of high air pressures, high temperatures and moisture.

For BEARINGS:
GARGOYLE D.T.E. OIL HEAVY MEDIUM—the oil is practically indestructible and will continue to furnish efficient and economical lubrication for long periods of time.

GARGOYLE

Marine Oils

A grade for each type of service

VACUUM OIL COMPANY *New York* U.S.A.

Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.

"MOTORSHIP" for February, 1926. Vol. XI, No. 2. A monthly journal published by MOTORSHIP, at 27 Pearl Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $3.00 per year, domestic; $3.50, foreign.

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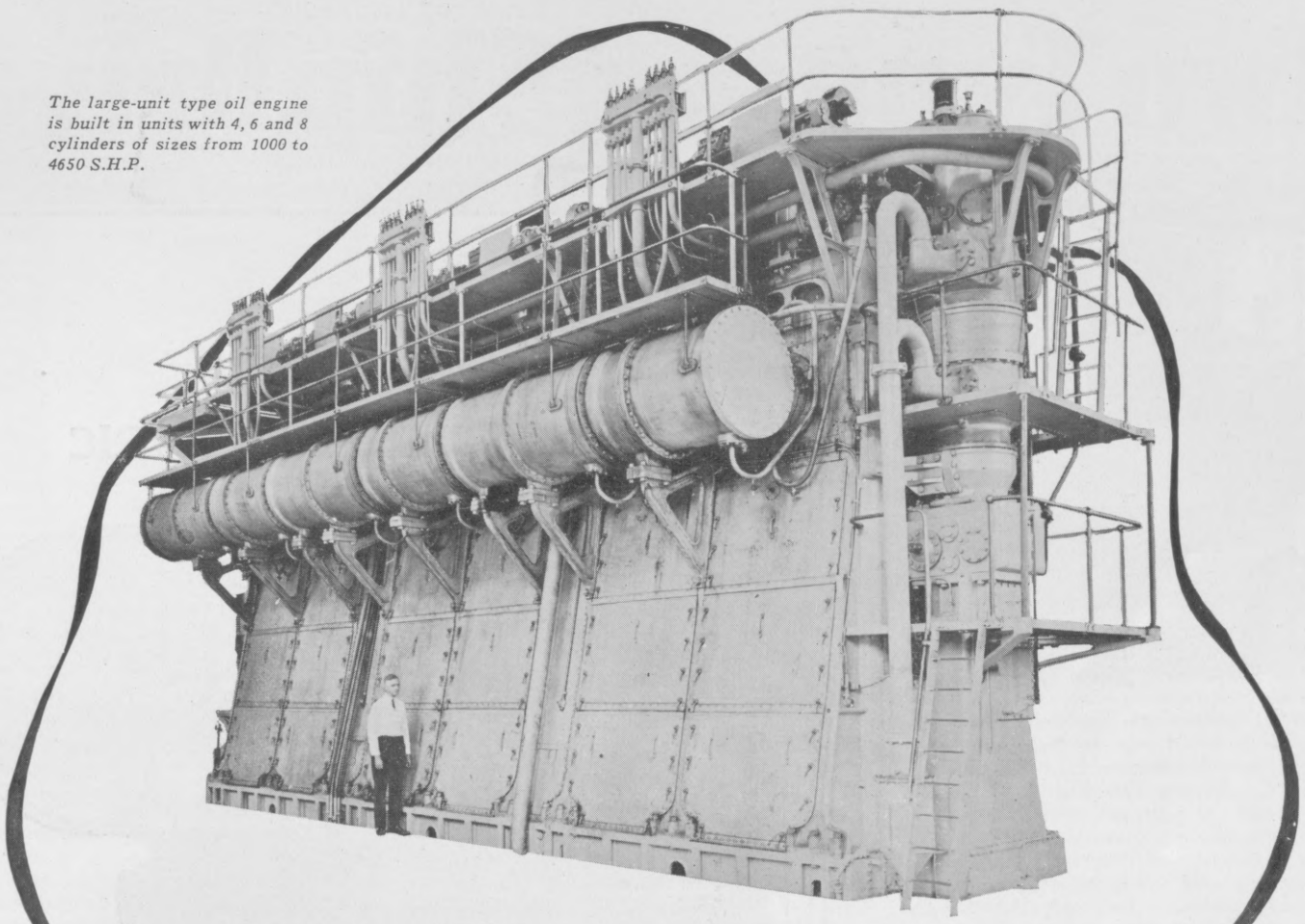

The large-unit type oil engine is built in units with 4, 6 and 8 cylinders of sizes from 1000 to 4650 S.H.P.

Three Good Reasons *for Oil Engine Propulsion*

1 Economy

Economy in the propulsion of ships is a large factor to shipowners. Compactness, permitting more cargo space, economy of operation and fuel economy are combined in the Bethlehem Large-unit Type Oil Engine.

2 Simplicity

The Bethlehem Large-unit Type Oil Engine externally and internally embodies simplicity. Simplicity permits easy and quick operation. There are no intricate mechanical devices requiring continuous repair and adjustment.

3 Dependability

Simplicity and ruggedness, two outstanding features in the design of the Bethlehem Oil Engine, insure the dependability so necessary to continuous operation of the main engines aboard ship.

Bethlehem Products Include:

Bethlehem Small-unit type Oil Engine
Bethlehem (Dahl) Mechanical Oil Burning System
Feed, Condensate, Circulating and General Service Pumps

Steam turbines, Boilers and Engines
Fuel Oil Transfer, Fuel Oil Service, and Forced Lubrication Pumps
Bilge Pumps, Air Pumps, Compressors, Feed Water Heaters, Evaporators

Deck Machinery of all kinds
Contra Propellers
Bethlehem (Amdyco) Fire Extinguishing System

BETHLEHEM SHIPBUILDING CORPORATION, LTD., BETHLEHEM, PA.
GENERAL SALES OFFICES: 25 BROADWAY, NEW YORK CITY

DISTRICT OFFICES: Boston, 100 Milk St.; Philadelphia, Widener Bldg.; Wilmington, Foot of West St.; Baltimore, South and Water Sts.; Cleveland, Union Trust Bldg.; Chicago, Monadnock Bldg.; San Francisco, Matson Bldg.

BETHLEHEM

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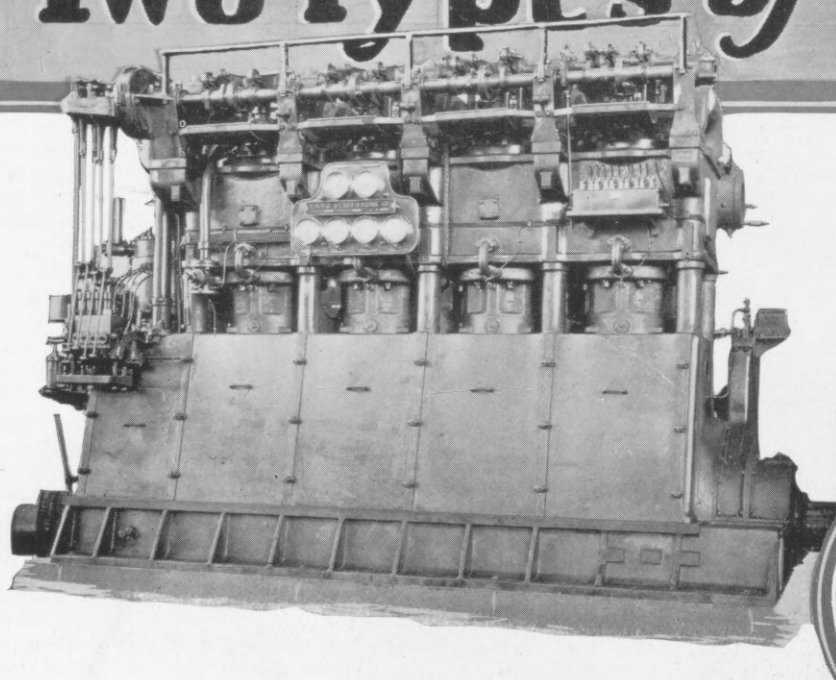
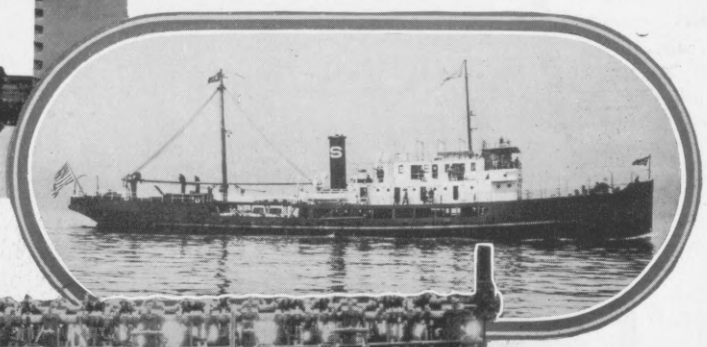
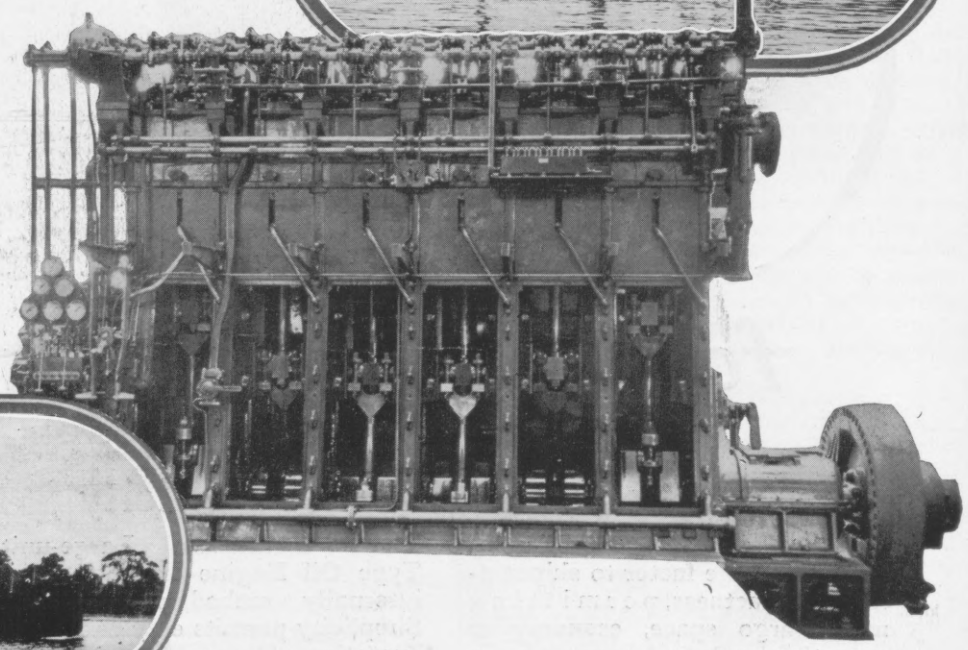
Two Types *of* Ship Drive

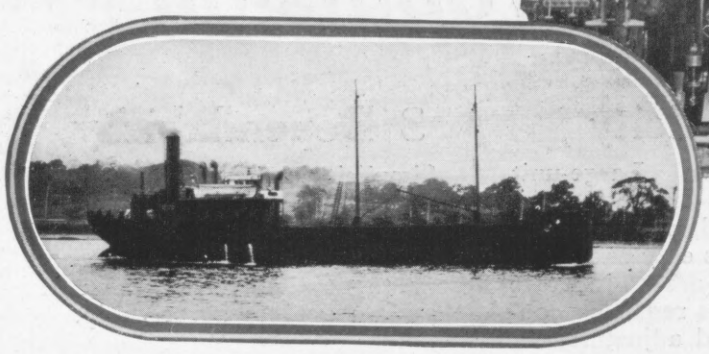


DIESEL-ELECTRIC





DIRECT-DIESEL



MODERN ship requirements call for two systems of propulsion—the Direct-drive and the Electric-drive, either of which is adopted according to the viewpoint for the particular conditions to be met.

Successful experiences of the Pacific Diesel Engine Company embody installations of both types, Pacific Werkspoor engines having been adopted by many prominent American ship-owners and by the Shipping Board.

Illustrated above is the Standard Oil Company of Cal.'s third Diesel-electric driven vessel to have Pacific Werkspoor Diesel engines and C. D. Mallory & Company's tanker PINTHIS direct-driven for Pacific Werkspoor cross-head type Diesel engines.

PACIFIC DIESEL ENGINE COMPANY

OAKLAND, CAL.

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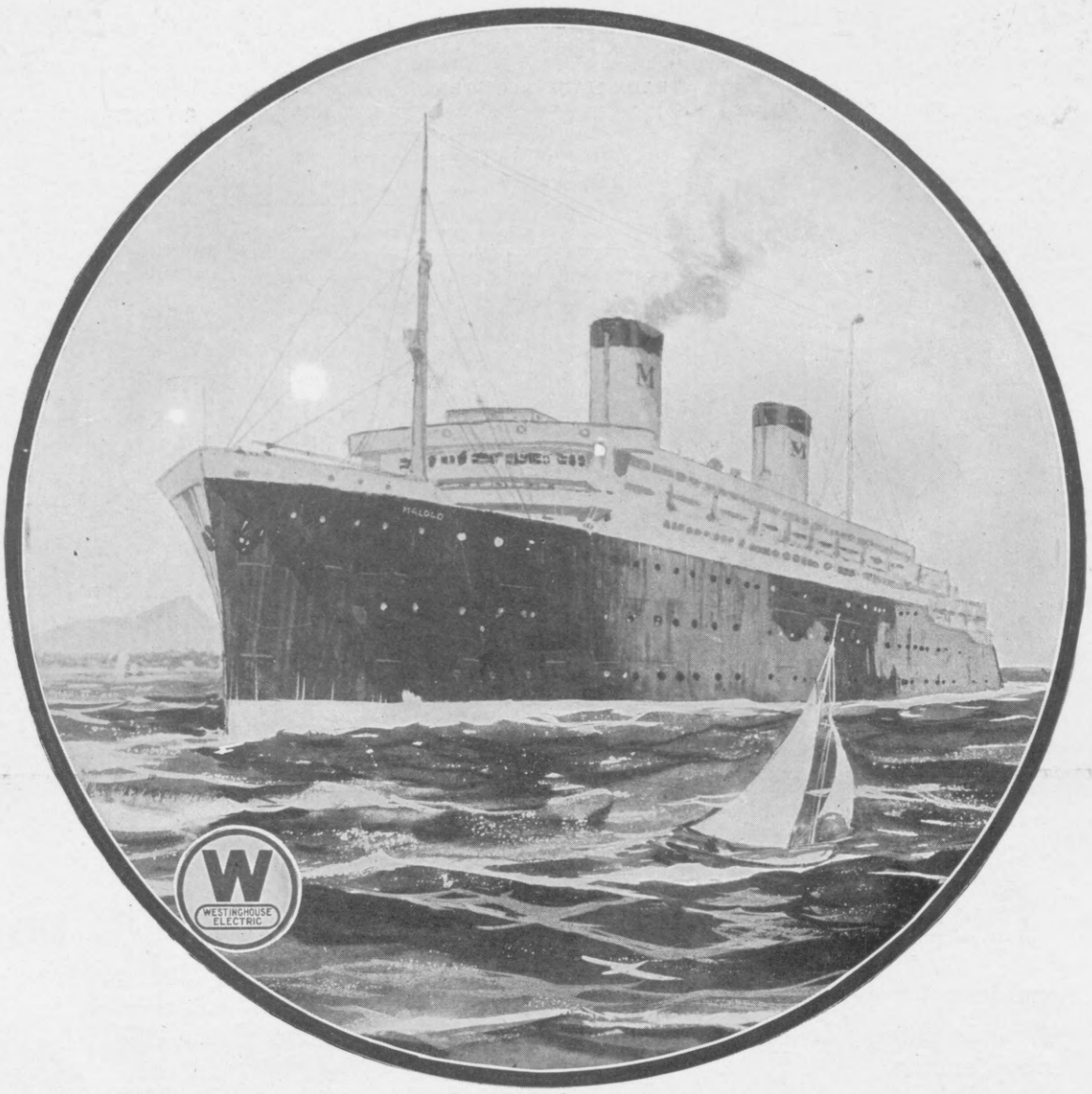

Westinghouse Electrical Equipment

Selected For

S. S. MALOLO

The Largest Passenger Ship ever built in American Yards

THE joint efforts of owner, marine architect and shipbuilder bring together in this one ship equipment representing the highest Standards of American Marine construction.

Westinghouse Electrical Equipment has been selected to furnish all light and auxiliary power.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURGH PENNSYLVANIA
Sales Offices in All Principal American Cities
Service Stations in Principal American Ports
Special Pacific Coast Representatives
HUNT, MIRK & CO., SAN FRANCISCO

Westinghouse

X86467

"MOTORSHIP" for March, 1926. Vol. XI, No. 3. A monthly journal published by MOTORSHIP, at 27 Pearl Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $3.00 per year, domestic; $3.50, foreign.

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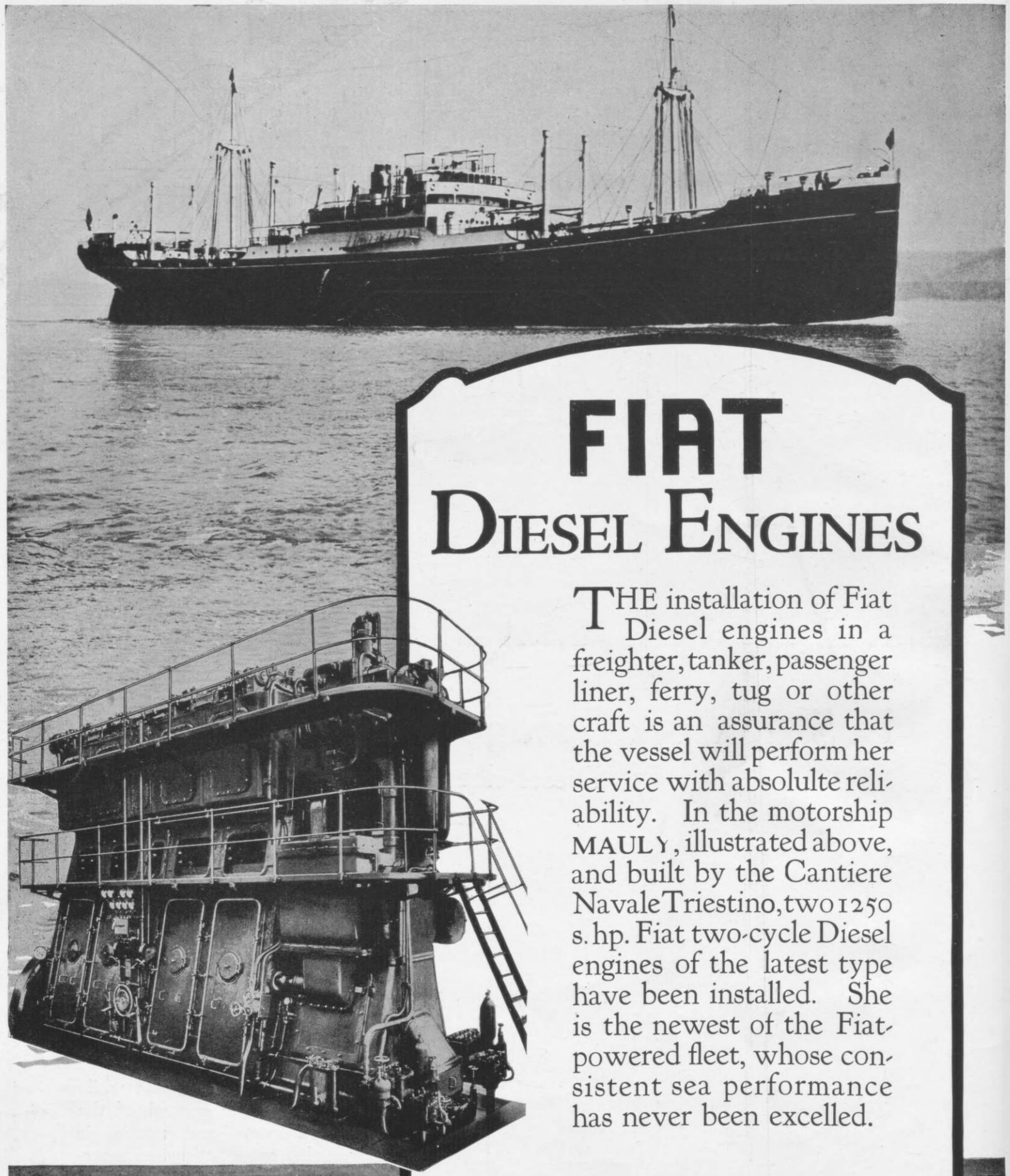

FIAT
DIESEL ENGINES

THE installation of Fiat Diesel engines in a freighter, tanker, passenger liner, ferry, tug or other craft is an assurance that the vessel will perform her service with absolulte reliability. In the motorship MAULY, illustrated above, and built by the Cantiere Navale Triestino, two 1250 s. hp. Fiat two-cycle Diesel engines of the latest type have been installed. She is the newest of the Fiat-powered fleet, whose consistent sea performance has never been excelled.

FIAT

STABILIMENTO GRANDI MOTORI
formerly the FIAT-SAN GIORGIO
OIL ENGINE DEPARTMENT
20 VIA CUNEO
TURIN, ITALY

Telegraphic Address
MOTORFIAT
TORINO, ITALY

"MOTORSHIP" for April, 1926. Vol. XI, No. 4. A monthly journal published by MOTORSHIP, at 27 Pearl Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $3.00 per year, domestic; $3.50, foreign.

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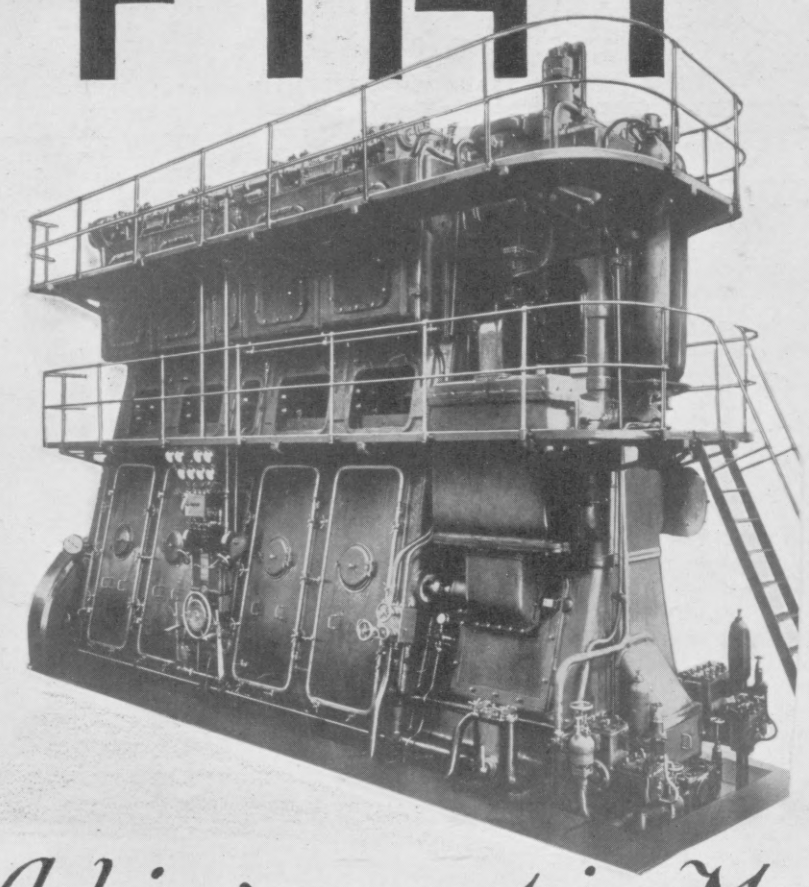

An Achievement in Modern Marine Engine Construction

FIAT Diesel motors are engineering achievements synonymous with master design and superb workmanship, and are built to withstand the severest duties to which ocean-going vessels are subjected. Of the two-cycle type, they are constructed both as single and double-acting engines.

FIAT

STABILIMENTO GRANDI MOTORI

formerly the FIAT-SAN GIORGIO

OIL ENGINE DEPARTMENT

20 VIA CUNEO
TURIN, ITALY

Telegraphic Address
MOTORFIAT
TORINO, ITALY

"MOTORSHIP" for May, 1926. Vol. XI, No. 5. A monthly journal published by MOTORSHIP, at 27 Pearl Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $3.00 per year, domestic; $3.50, foreign.

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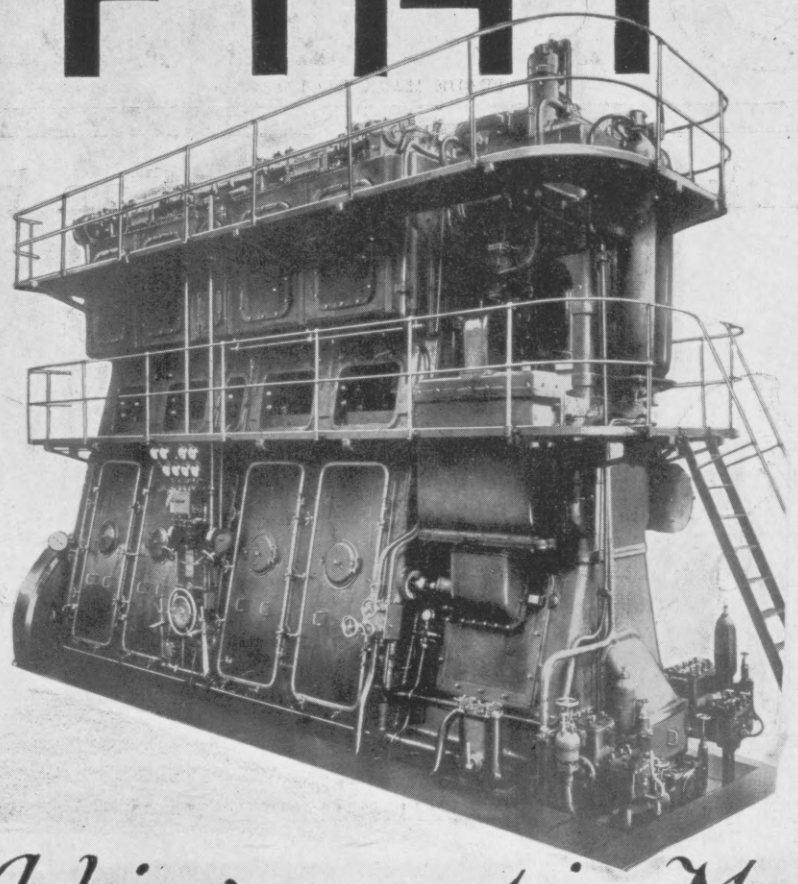

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OIL ENGINE DEPARTMENT
20 VIA CUNEO
TURIN, ITALY

Telegraphic Address
MOTORFIAT
TORINO, ITALY

"MOTORSHIP" for June, 1926. Vol. XI, No. 6. A monthly journal published by MOTORSHIP, at 220 West 42nd Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $3.00 per year, domestic; $3.50, foreign.

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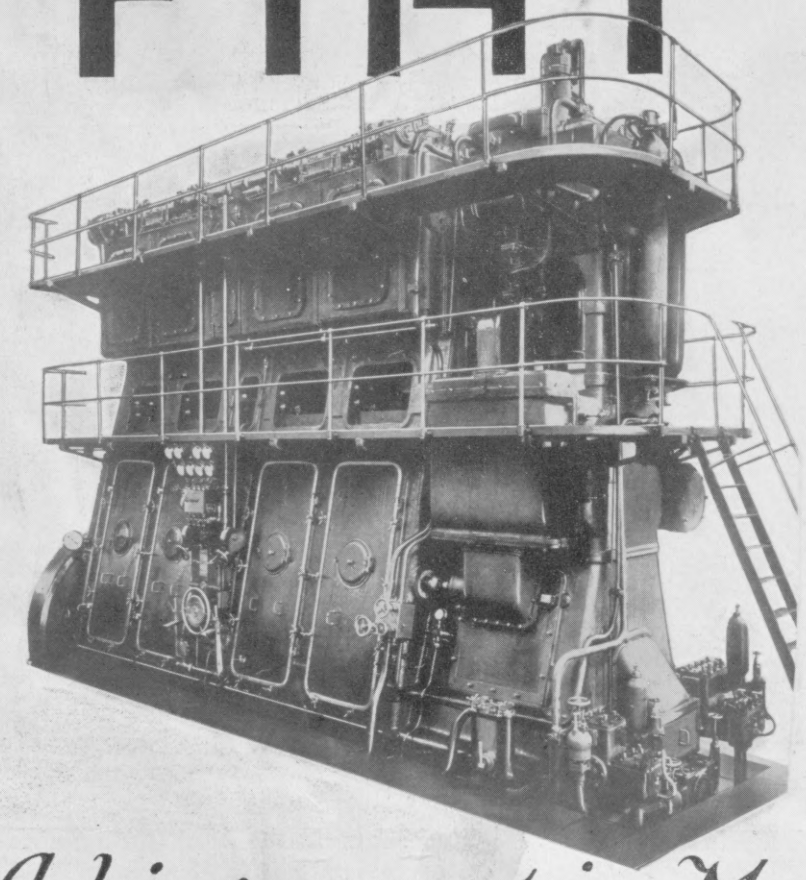

An Achievement in Modern Marine Engine Construction

FIAT Diesel motors are engineering achievements synonymous with master design and superb workmanship, and are built to withstand the severest duties to which ocean-going vessels are subjected. Of the two-cycle type, they are constructed both as single and double-acting engines.

FIAT

STABILIMENTO GRANDI MOTORI

formerly the FIAT-SAN GIORGIO

OIL ENGINE DEPARTMENT

20 VIA CUNEO
TURIN, ITALY

Telegraphic Address
MOTORFIAT
TORINO, ITALY

"MOTORSHIP" for July, 1926. Vol. XI, No. 7. A monthly journal published by MOTORSHIP, at 220 West 42nd Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $4.00 per year, domestic; $5.00, foreign.

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ANNOUNCEMENT

Nordberg Secures Well Known Line Of European Diesel Engines

Nordberg-Fiat Diesel Engines Now Offered For Marine Service

Diesel engines built by Fiat have long held a prominent place in the marine field. Comparable to the position held by these engines in marine service is that maintained by Nordberg Diesels in stationary applications. The largest stationary single units and the largest installations in North America have been made by Nordberg. The engines of both builders hold enviable records for the services they have rendered.

With the securing of the American License for the building of Fiat engines, Nordberg is now prepared to furnish Diesels of known reputation and approved design for service aboard ship. A combination of Fiat marine experience with Nordberg engineering and unexcelled manufacturing facilities places Nordberg in an excellent position to furnish Diesels for marine service.

Nordberg-Fiat Diesels can be furnished in both heavy duty and high speed types. **Both Nordberg and Fiat** from their inception in the building of Diesel engines have centered their efforts entirely in engines of the **TWO-CYCLE** design. The many successful installations made by both companies is evidence that this principle of operation is correct and the designs in keeping with sound engineering practice.

Confer with Nordberg Engineers in regard to your Marine Diesel requirements.

NORDBERG MFG. CO., Milwaukee, Wis., U. S. A.

NORDBERG

"MOTORSHIP" for August, 1926. Vol. XI, No. 8. A monthly journal published by MOTORSHIP, at 220 West 42nd Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $4.00 per year, domestic; $5.00, foreign.

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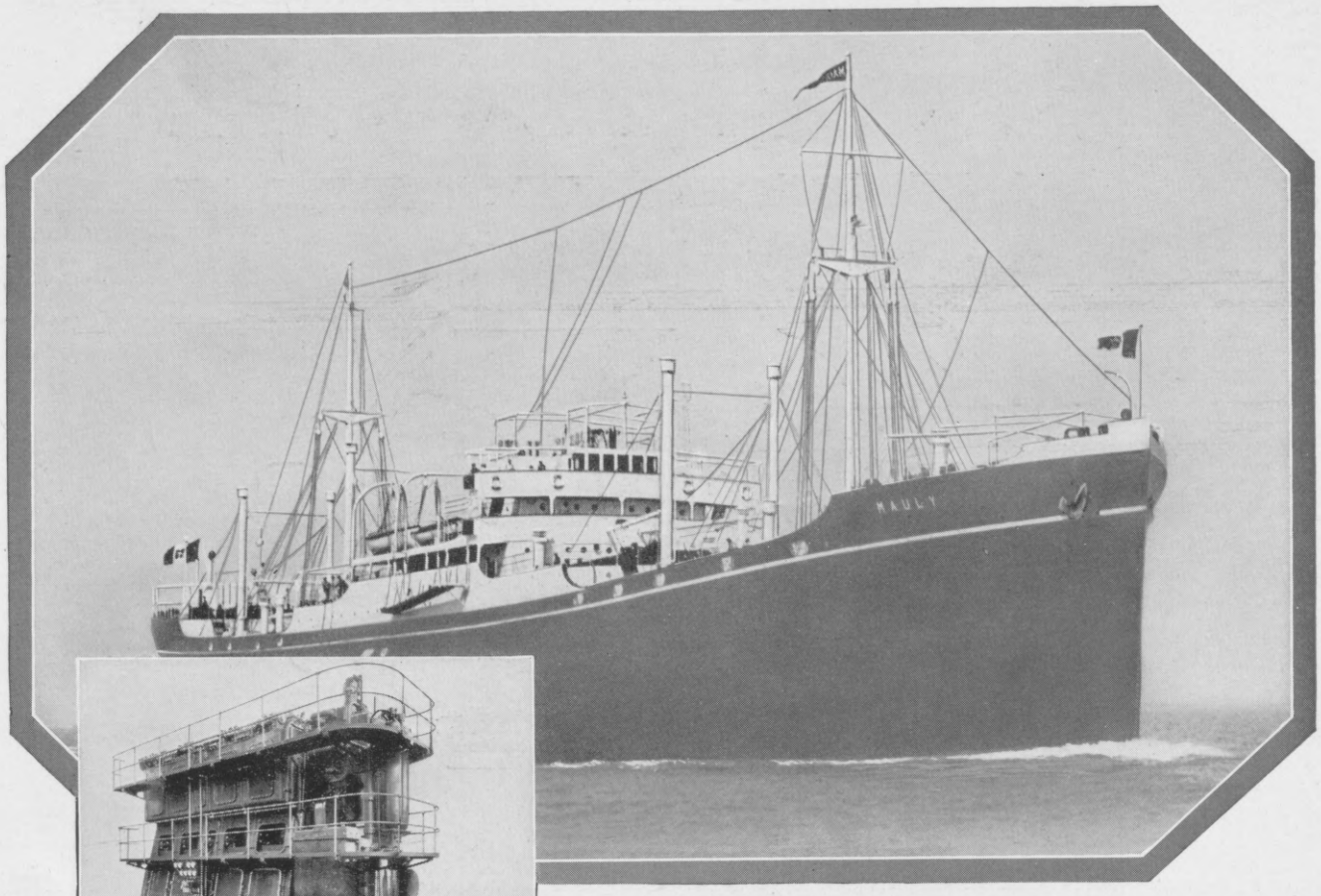

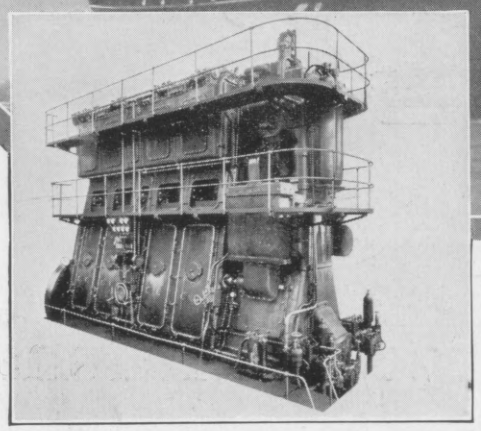

Motorship MAULY, an 8,700 ton cargo boat built by the Cantiere Navale Triestino of Monfalcone and equipped with two Fiat Diesel Engines, each developing 1250 horsepower at 115 R.P.M.

Diesels of Known Design and Performance

BACK of the marine Diesel Engines now offered by Nordberg are enviable records for performance and service rendered. Diesels built by Nordberg in America and Fiat in Europe are recognized for the high quality of their design, their better construction and thorough dependability.

Nordberg has now secured the manufacturing rights for Fiat Diesels in America. This enables the American user of marine Diesels, particularly in the larger sizes, to benefit by the experiences and engineering skill of these two companies together with the extensive manufacturing facilities of Nordberg.

You take no chances with the purchase of Nordberg-Fiat Diesels. They are of a known design that has proved successful after long and severe service. There are now over 230,000 H.P. in service in the high seas, and have performed in a manner that has fulfilled every expectation.

When considering the power equipment for that motor ship, whether it is new construction or conversion, Nordberg Engineers will gladly explain the many features of Nordberg-Fiat Diesels.

NORDBERG MFG. CO., MILWAUKEE, WIS.

NORDBERG-FIAT
MARINE DIESEL ENGINES

"MOTORSHIP" for September, 1926. Vol. XI, No. 9. A monthly journal published by MOTORSHIP, at 220 West 42nd Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $4.00 per year, domestic; $5.00, foreign.

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Keeping up-to-date with *Diesels*

THE eyes of marine engineers, ship builders and shipping men are watching the daily developments of Diesel-engined ships.

Commissioner Hill of the Shipping Board recently said:

> "America must turn to the construction of Diesel-engined merchant ships or fall behind the rest of the world. In order to develop the building of such motors throughout our entire country contracts have been let on both coasts and in the interior. This is the most commendable forward movement to keep our American Merchant Marine in position to meet world competition."

America is *keeping up-to-date with Diesel Engine Development.* The Vacuum Oil Company is *keeping up-to-date with Diesel Engine Lubrication.* Ever since the appearance of the first Diesel Engine we have worked together with builders and the marine engineers in charge of operation on their lubrication problems. Gargoyle lubricating oils, manufactured to meet the special requirements of Diesel Engines, are stocked and sold in more than 300 ports.

Over 65% of the world's Diesel-engined ships use Gargoyle Lubricating Oils.

GARGOYLE

Marine Oils

A grade for each type of service

Vacuum Oil Company — *Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.* — *New York, U. S. A.*

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13 U. S. Coast Guard Patrol Boats Powered with WINTON DIESEL ENGINES

32 MORE of THESE BOATS NOW BUILDING WILL BE SIMILARLY EQUIPPED

The WINTON ENGINE COMPANY

CLEVELAND — OHIO — U. S. A.

NEW YORK—A. G. Griese, Inc. 331 Madison Ave. LOS ANGELES—F. G. Bryant, 201 F. W. Braun Bldg.
CLEVELAND—F. C. Erdman Co., Union Trust Bldg. WASHINGTON—R. L. Fryer, 430 Transp't'n Bldg.
NEW ORLEANS—Warren C. Graham Co., 411 Godchaux Bldg. SEATTLE—J. O. Larsen, 19 Colman Dock.
BOSTON—Walter H. Moreton Corporation, 780 Commonwealth Avenue

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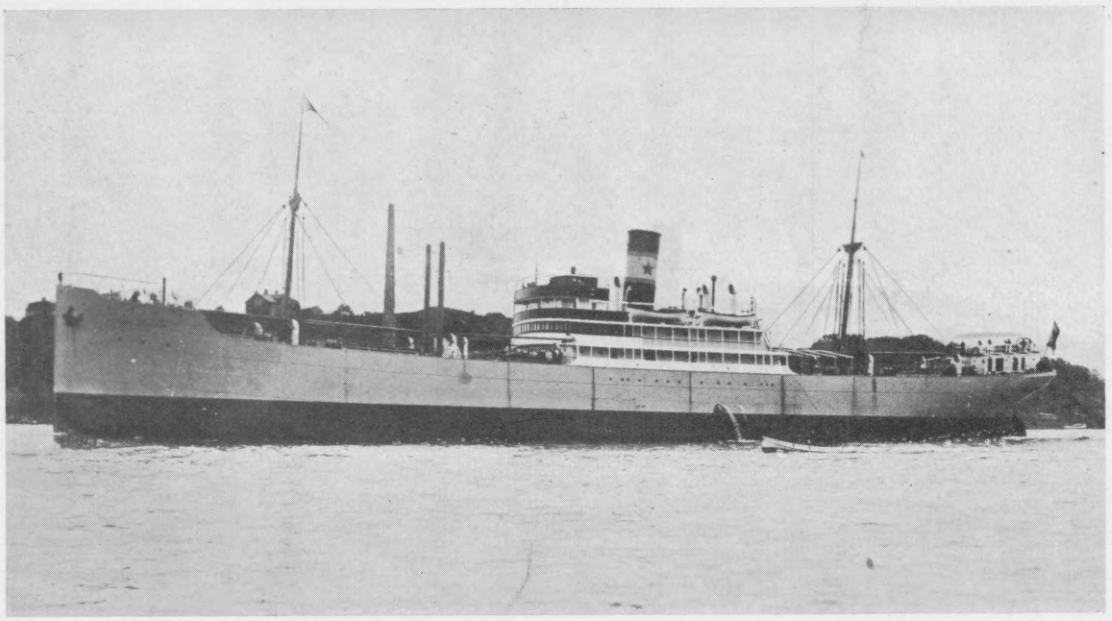
PERFORMANCES OF GÖTAVERKEN MOTORSHIPS



No 25 THE M.S. "AXEL JOHNSON"

7.150 tons d. w.; Owners: The Johnson Line, Stockholm

Date of delivery	Aug. 22nd 1925
Passengers	29 1st class 28 3rd „
Power	3.400 I. H. P.
Average speed	12¼ knots
Daily fuel consumption (incl. auxil.)	11 tons
Cruising radius	38.000 naut. miles

BUILT AND DIESEL-ENGINED BY THE GÖTAVERKEN

GÖTAVERKEN

GÖTEBORG - SWEDEN

SHIPBUILDERS AND DIESEL-ENGINE CONSTRUCTORS

LARGEST FLOATING DRY-DOCK IN SCANDINAVIA
LIFTING CAPACITY 18,000 TONS

GÖTEBORG SWEDEN
GÖTAVERKEN

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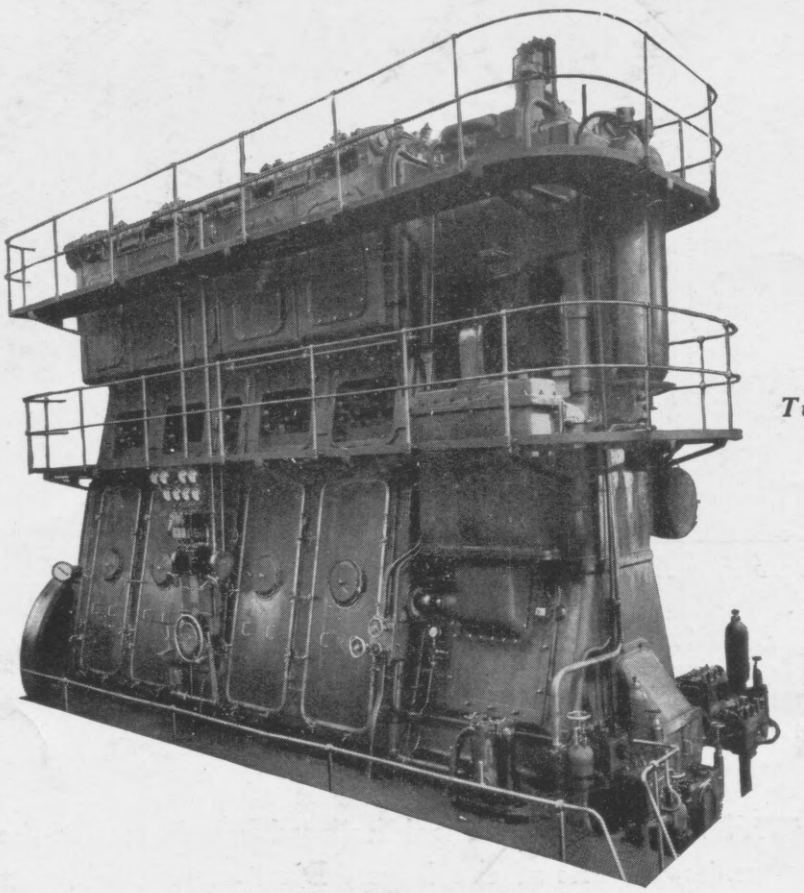
NORDBERG-FIAT

MARINE DIESEL ENGINES

Heavy Duty and High Speed Types



Two Cycle Design and of Crosshead Construction

Nordberg-Fiat Marine Diesel Engine developing 1250 H.P. at 115 R. P. M.

Facilities For Diesel Engine Building

The first Diesel engine built by Nordberg in 1915 was 1250 horsepower in size, the largest to have been built in this country up until that time. Since then we have led in the building of large Diesel units. The 4000 horsepower stationary engines built by Nordberg hold the record for size of single units. A plant with a combined horsepower of 12,000 has not been approached by any other American builder. Nordberg has built more stationary Diesels of over 1,000 horsepower in size than all other builders in the United States combined.

To have been so successful in the building of large Diesels, it is evident that Nordberg is adequately equipped both in engineering and manufacturing facilities for producing large and high grade Diesel engines as required for marine service.

Nordberg has now secured the license for building Fiat Diesels in this country. A combination of Fiat marine experience with that of Nordberg in the stationary field, together with the high quality of the engineering talent of both companies, now enables Nordberg to offer heavy duty and high speed Diesel engines for any service. This combination is assurance of dependable and satisfactory performance of Nordberg Diesels such as is expected in marine applications. If you are contemplating the installation of Diesel engines, particularly in the larger sizes, let Nordberg Engineers explain the many features of our Diesels.

NORDBERG MFG. CO., MILWAUKEE, WIS.

"MOTORSHIP" for October, 1926. Vol. XI, No. 10. A monthly journal published by MOTORSHIP, at 220 West 42nd Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $4.00 per year, domestic; $5.00, foreign.

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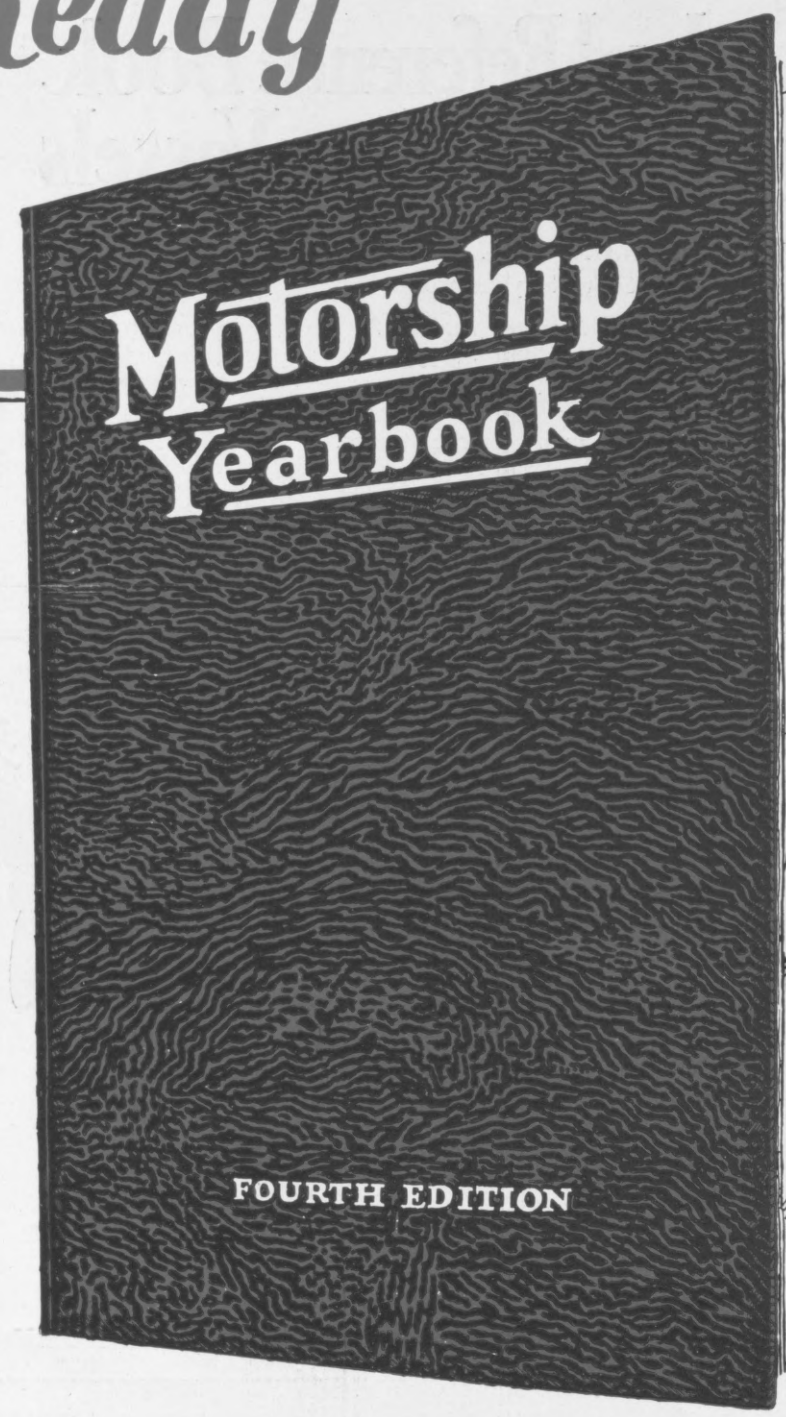

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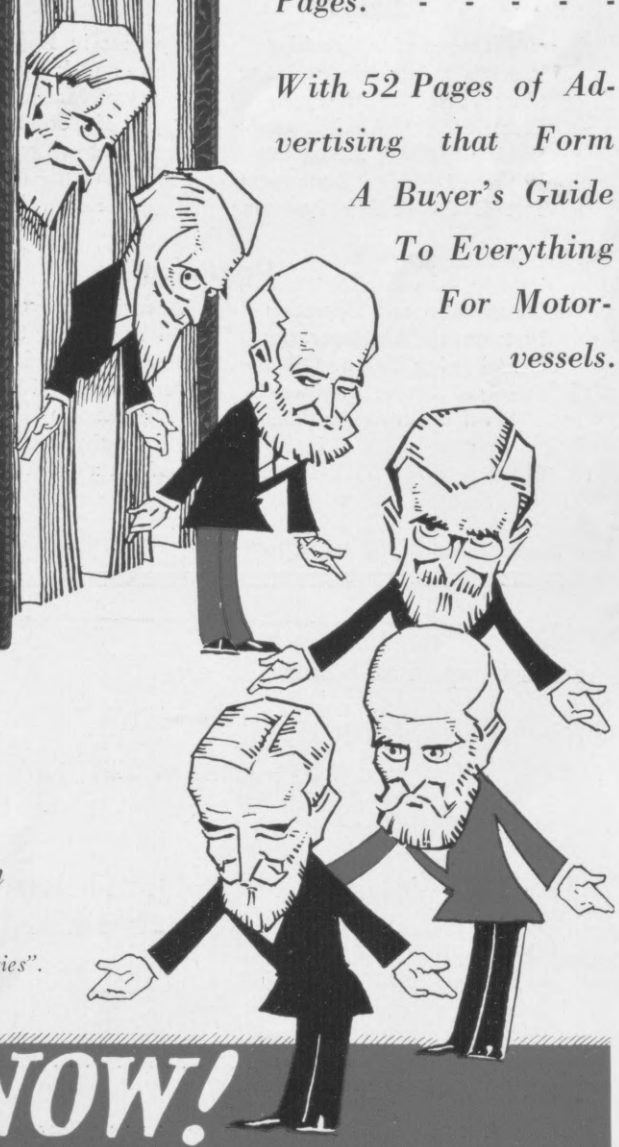

"I keep six honest serving-men;
(They taught me all I knew)
Their names are What and Where and When
And How and Why and Who."

RUDYARD KIPLING, *"Just So Stories".*

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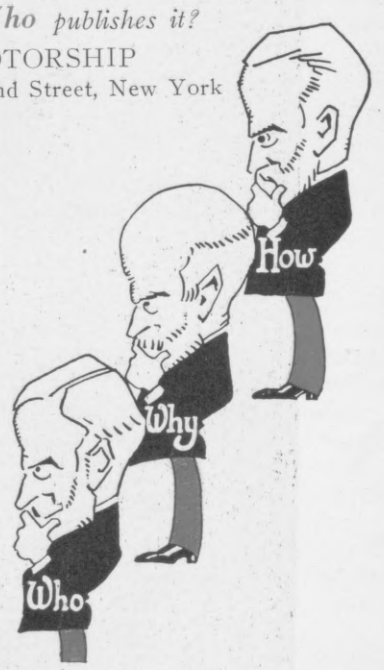

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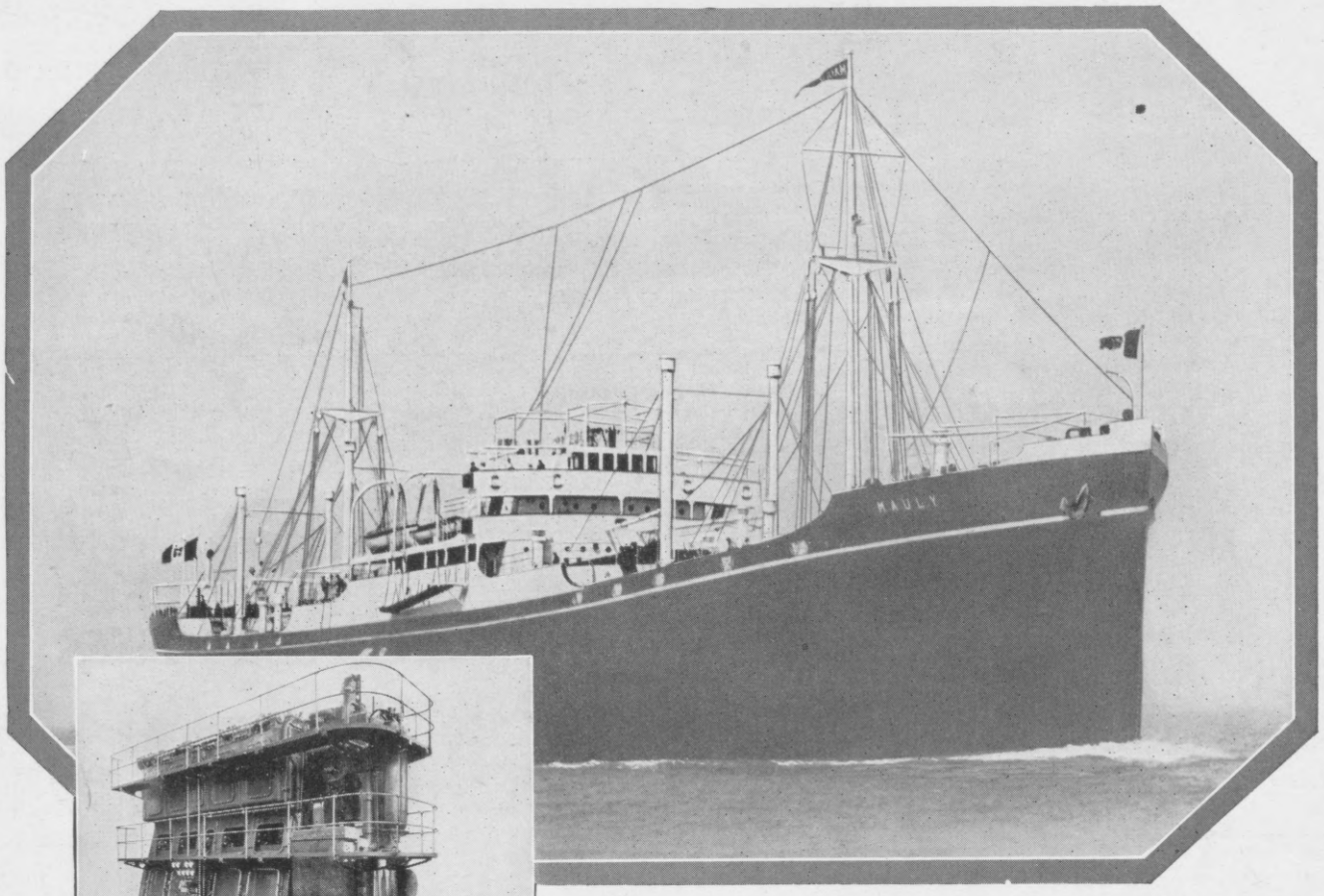

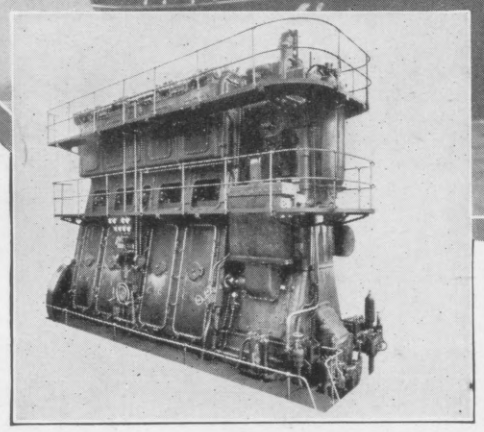

Motorship MAULY, an 8,700 ton cargo boat built by the Cantiere Navale Triestino of Monfalcone and equipped with two Fiat Diesel Engines, each developing 1250 horsepower at 115 R.P.M.

Diesels of Known Design and Performance

BACK of the marine Diesel Engines now offered by Nordberg are enviable records for performance and service rendered. Diesels built by Nordberg in America and Fiat in Europe are recognized for the high quality of their design, their better construction and thorough dependability.

Nordberg has now secured the manufacturing rights for Fiat Diesels in America. This enables the American user of marine Diesels, particularly in the larger sizes, to benefit by the experiences and engineering skill of these two companies together with the extensive manufacturing facilities of Nordberg.

You take no chances with the purchase of Nordberg-Fiat Diesels. They are of a known design that has proved successful after long and severe service. There are now over 230,000 H.P. in service in the high seas, and have performed in a manner that has fulfilled every expectation.

When considering the power equipment for that motor ship, whether it is new construction or conversion, Nordberg Engineers will gladly explain the many features of Nordberg-Fiat Diesels.

NORDBERG MFG. CO., MILWAUKEE, WIS.

NORDBERG-FIAT
MARINE DIESEL ENGINES

"MOTORSHIP" for November, 1926. Vol. XI, No. 11. A monthly journal published by MOTORSHIP, at 220 West 42nd Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $4.00 per year, domestic; $5.00, foreign.

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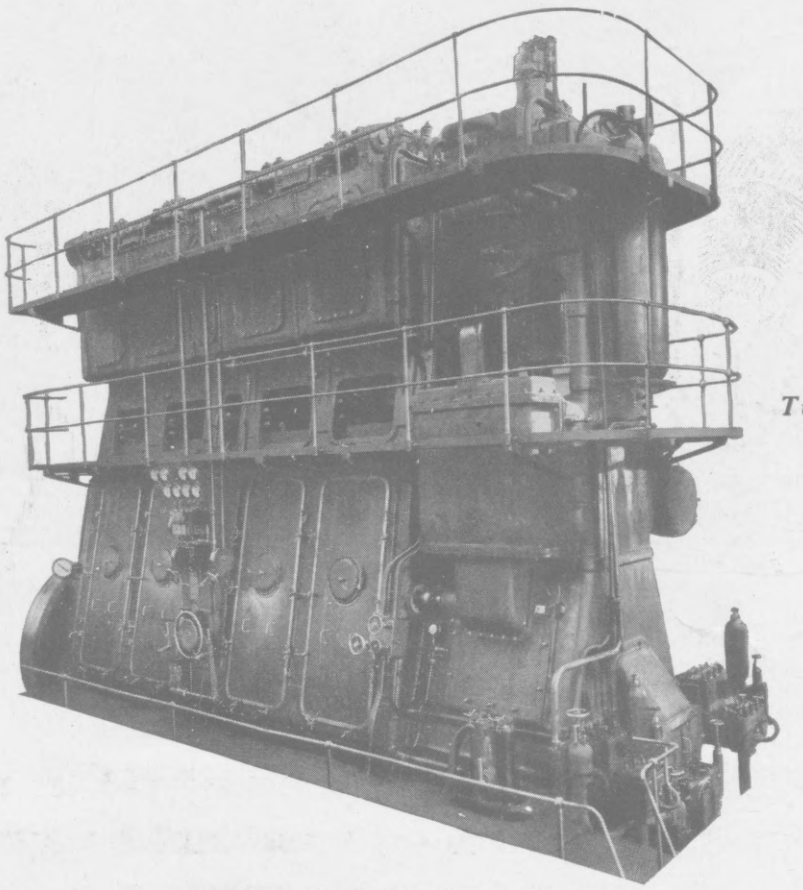
NORDBERG-FIAT

MARINE DIESEL ENGINES

Heavy Duty and High Speed Types



Two Cycle Design and of Crosshead Construction

Nordberg-Fiat Marine Diesel Engine
developing 1250 H.P. at 115 R. P. M.

Facilities For Diesel Engine Building

The first Diesel engine built by Nordberg in 1915 was 1250 horsepower in size, the largest to have been built in this country up until that time. Since then we have led in the building of large Diesel units. The 4000 horsepower stationary engines built by Nordberg hold the record for size of single units. A plant with a combined horsepower of 12,000 has not been approached by any other American builder. Nordberg has built more stationary Diesels of over 1,000 horsepower in size than all other builders in the United States combined.

To have been so successful in the building of large Diesels, it is evident that Nordberg is adequately equipped both in engineering and manufacturing facilities for producing large and high grade Diesel engines as required for marine service.

Nordberg has now secured the license for building Fiat Diesels in this country. A combination of Fiat marine experience with that of Nordberg in the stationary field, together with the high quality of the engineering talent of both companies, now enables Nordberg to offer heavy duty and high speed Diesel engines for any service. This combination is assurance of dependable and satisfactory performance of Nordberg Diesels such as is expected in marine applications. If you are contemplating the installation of Diesel engines, particularly in the larger sizes, let Nordberg Engineers explain the many features of our Diesels.

NORDBERG MFG. CO., MILWAUKEE, WIS.

"MOTORSHIP" for December, 1926. Vol. XI, No. 12. A monthly journal published by MOTORSHIP, at 220 West 42nd Street, New York, N. Y. Entered as second class matter July 16, 1918, at the Post Office, New York, under the Act of March 3, 1879. Subscription, $4.00 per year, domestic; $5.00, foreign.

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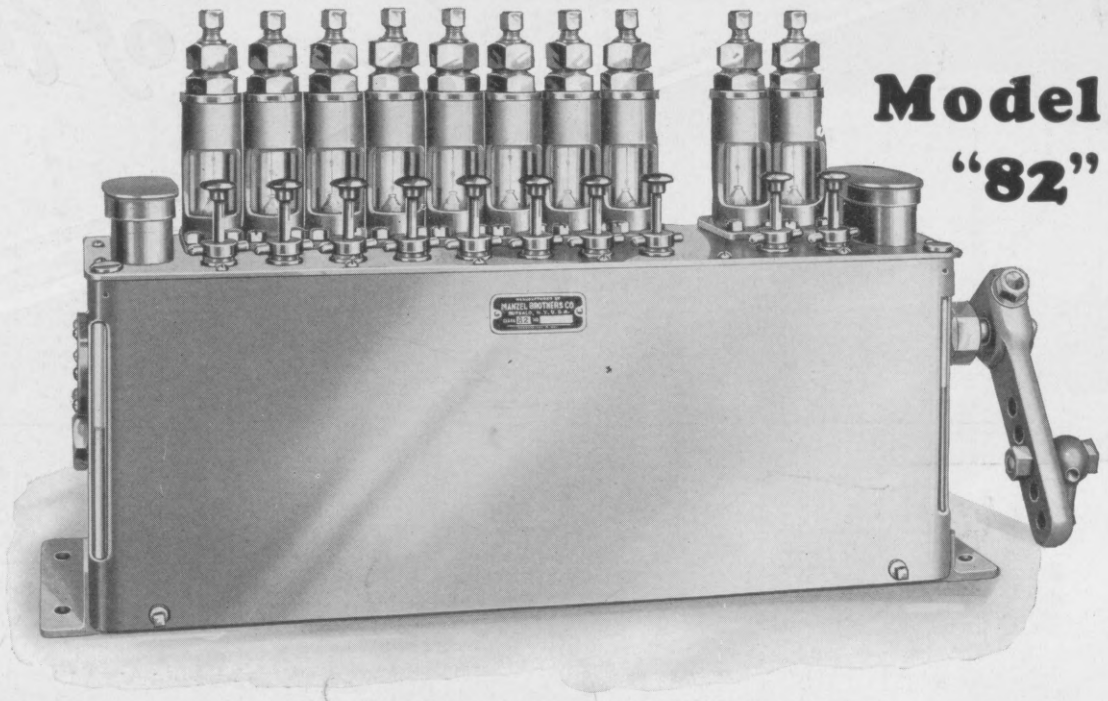
The "Manzel" Improved Diesel Engine Lubricator



10-feed, Two-Compartment, Model "82" Lubricator

Combining the benefits of accurately timed lubrication with the advantage of greater accessibility of working parts

If you have never timed the injection of the oil into your engine cylinders, you really do not know *all* that your engine will do.

Why not follow the lead of America's principal Diesel Engine builders and lubricate your engines with "Manzel" Diesel Engine Lubricators, thereby insuring freedom from costly lubrication troubles.

In the "Manzel" Diesel Engine Lubricator, Model "82", another great forward stride has been made in the field of Diesel and Oil Engine lubrication.

Forcing the oil into the cylinders in accurately measured quantities, it delivers the charge of fresh oil exactly where you want it and at the exact time desired for most effective lubrication.

The actual amount of oil measured out by the lubricator plungers is shown in the sight feed glasses, on its way to the cylinders, after it has passed all possible places of leakage. No chance of invisible leakage back into the reservoir.

And each pumping unit is readily removable without stopping the engine, emptying the lubricator reservoir or interfering with the operation of other units.

Each feed is independently regulated and is fitted with an individual hand pump for emergency use.

It is the lubricator you need on your Diesel Engines.

May we send you complete information?

Manzel Brothers Company

300-302 Babcock Street **Buffalo, N. Y.**

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Power with Efficiency
are the fundamentals of the

SEVEN large American vessels and one pleasure yacht are now equipped with American built Sun-Doxford Diesel Engines.

M.S. Gulf of Venezuela	3000 h.p.	10,200 d.w.t.
M.S. Twin-Screw East Indian	5000 h.p.	11,600 d.w.t.
M.S. Challenger	3000 h.p.	11,600 d.w.t.
M.S. Bidwell	3000 h.p.	10,200 d.w.t.
M.S. Miller County	3000 h.p.	10,200 d.w.t.
M.S. Benson Ford	3300 h.p.	12,000 d.w.t.
M.S. Henry Ford II	3300 h.p.	12,000 d.w.t.
M.S. Twin-Screw Yacht Sialia	1500 h.p.	

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SUN SHIPBUILDING & DRY DOCK COMPANY

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920 Cunard Building
25 Broadway, New York City

DRYDOCKING and REPAIRS

OPPOSED-PISTON
SUN-DOXFORD
TWO CYCLE DIESEL ENGINE

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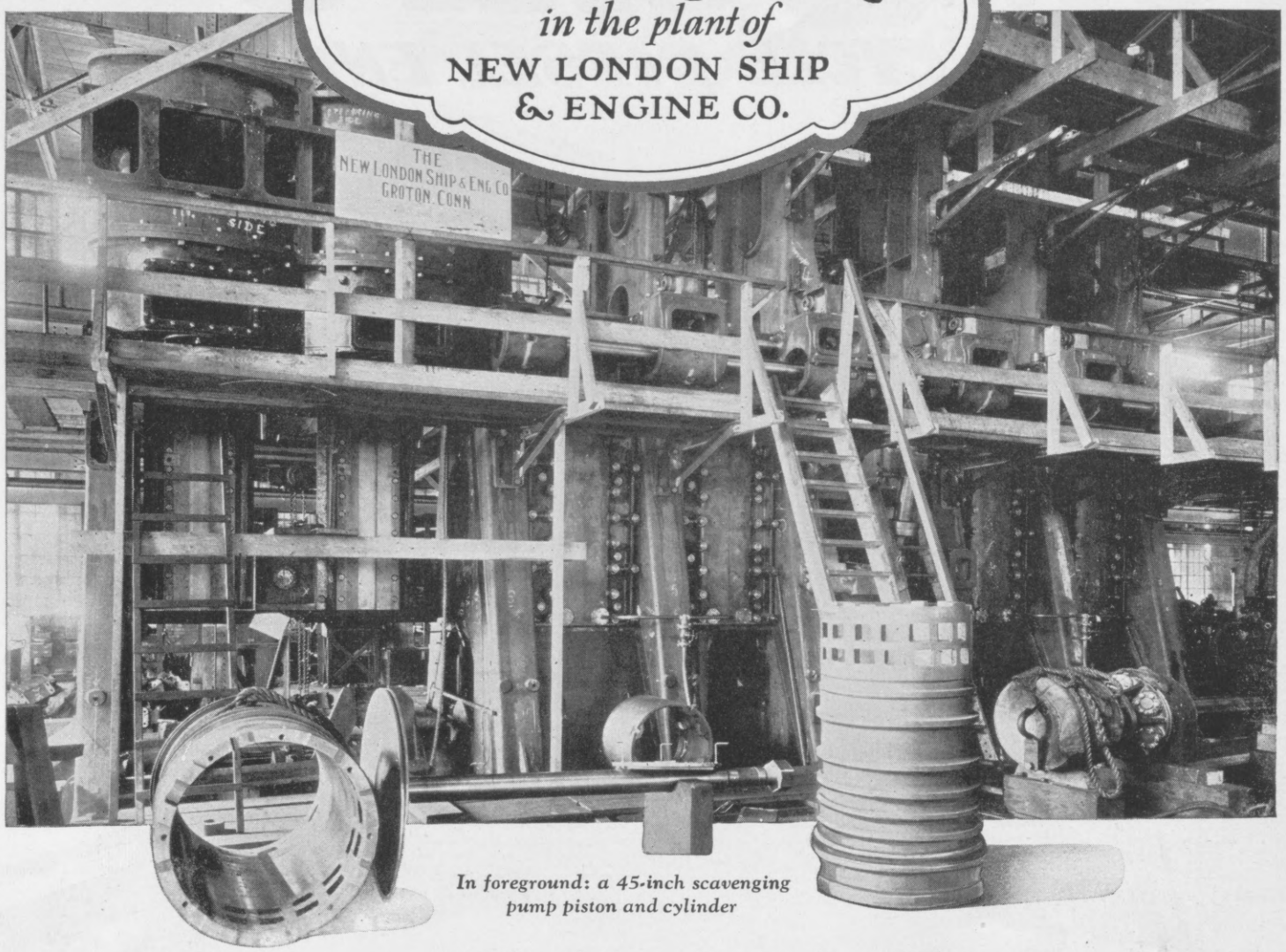
Assembling
3300 H.P. Shipping Board Engine
in the plant of
NEW LONDON SHIP & ENGINE CO.



In foreground: a 45-inch scavenging pump piston and cylinder

The New London Ship & Engine Company's engineers specify American Hammered Piston Rings in all installations.

American Hammered Piston Rings

AMERICAN HAMMERED PISTON RING COMPANY, BALTIMORE, MD.

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INTRODUCING ~

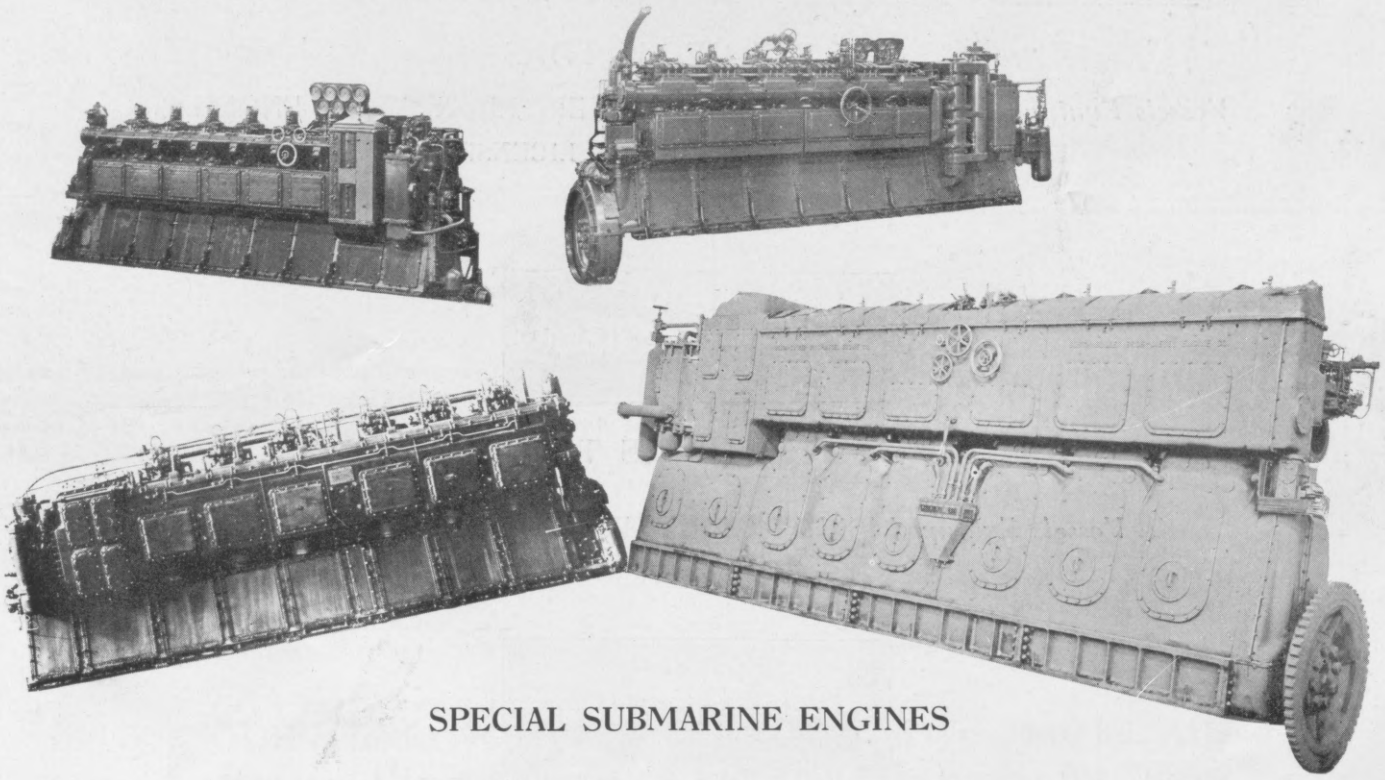
A line of higher speed, lighter weight Diesels

—250 to 1000 B. H. P.—

for Direct or Diesel Electric Drive

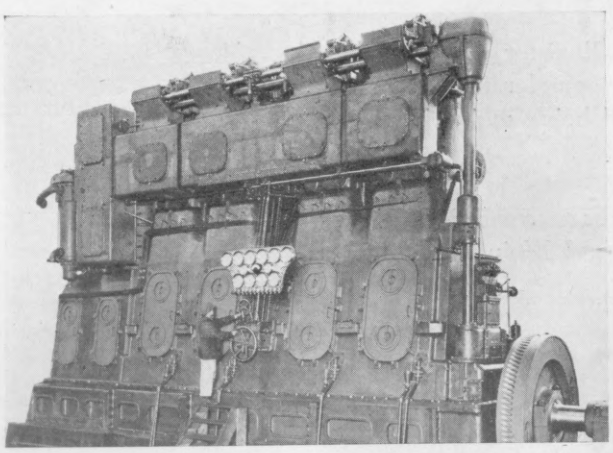
It is especially suited for Yachts, Ferries, Tugs, Dredges, River and Canal Boats and Auxiliary Service where space, headroom and weight are factors.

The special features of our well seasoned two cycle engines which we have built for the past ten years are embodied in this new line.



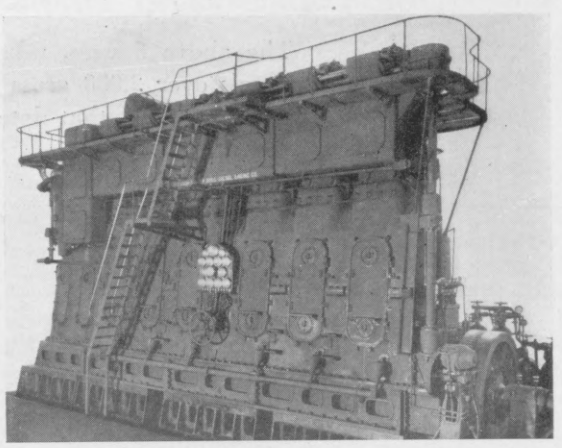
SPECIAL SUBMARINE ENGINES

TYPICAL BUSCH-SULZER TWO CYCLE DIESELS



1500 B. H. P.

COMMERCIAL MARINE ENGINES



3000 B. H. P

BUSCH-SULZER BROS.—DIESEL ENGINE CO., ST. LOUIS, MO.

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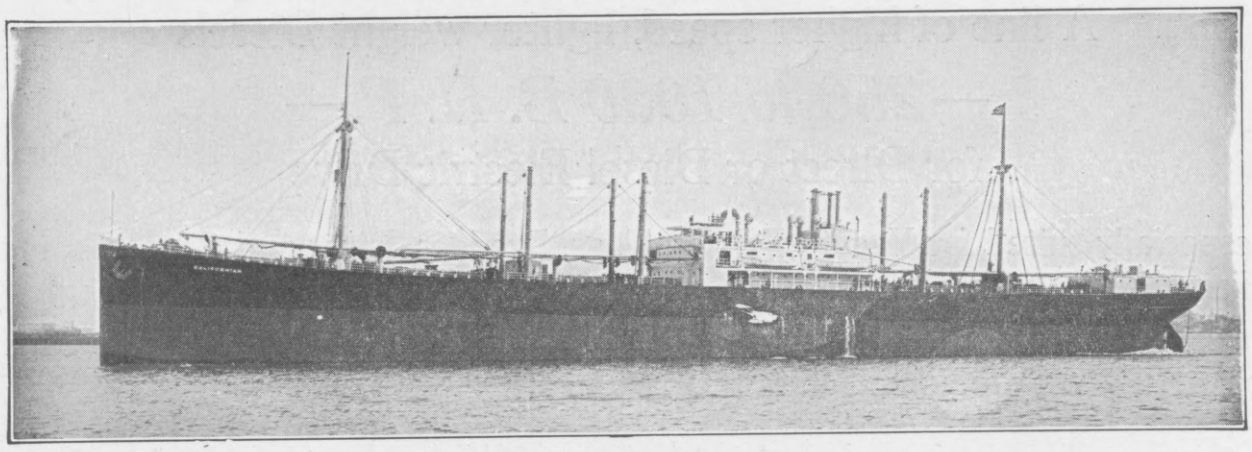
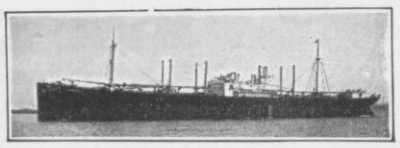


786,787 GROSS TONS

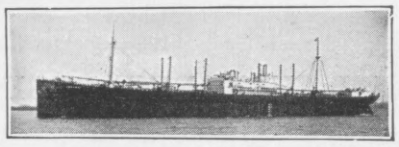
Vessels Equipped With FOUR CYCLE BURMEISTER & WAIN ENGINES

By BURMEISTER & WAIN & LICENSEES



234,113 GROSS TONS

All Vessels Equipped With OTHER TYPES FOUR CYCLE ENGINES



248,493 GROSS TONS

All Vessels Equipped With TWO CYCLE ENGINES

The above figures, taken from Shipping Register of September 2, 1924, for vessels over 2,000 gross tons, shows the preponderance of the Burmeister & Wain System at that date and which is still being maintained.

Up to Nov. 1, 1926, 276 Vessels of 1,513,817 gross tons and 906,365 I. H. P. have been equipped with Burmeister and Wain Engines.

THE WM. CRAMP & SONS S. & E. BLDG. CO.

PHILADELPHIA, PA., U. S. A.

Sole Builders of Burmeister & Wain Engines in America

UNDER U. S. LICENSE

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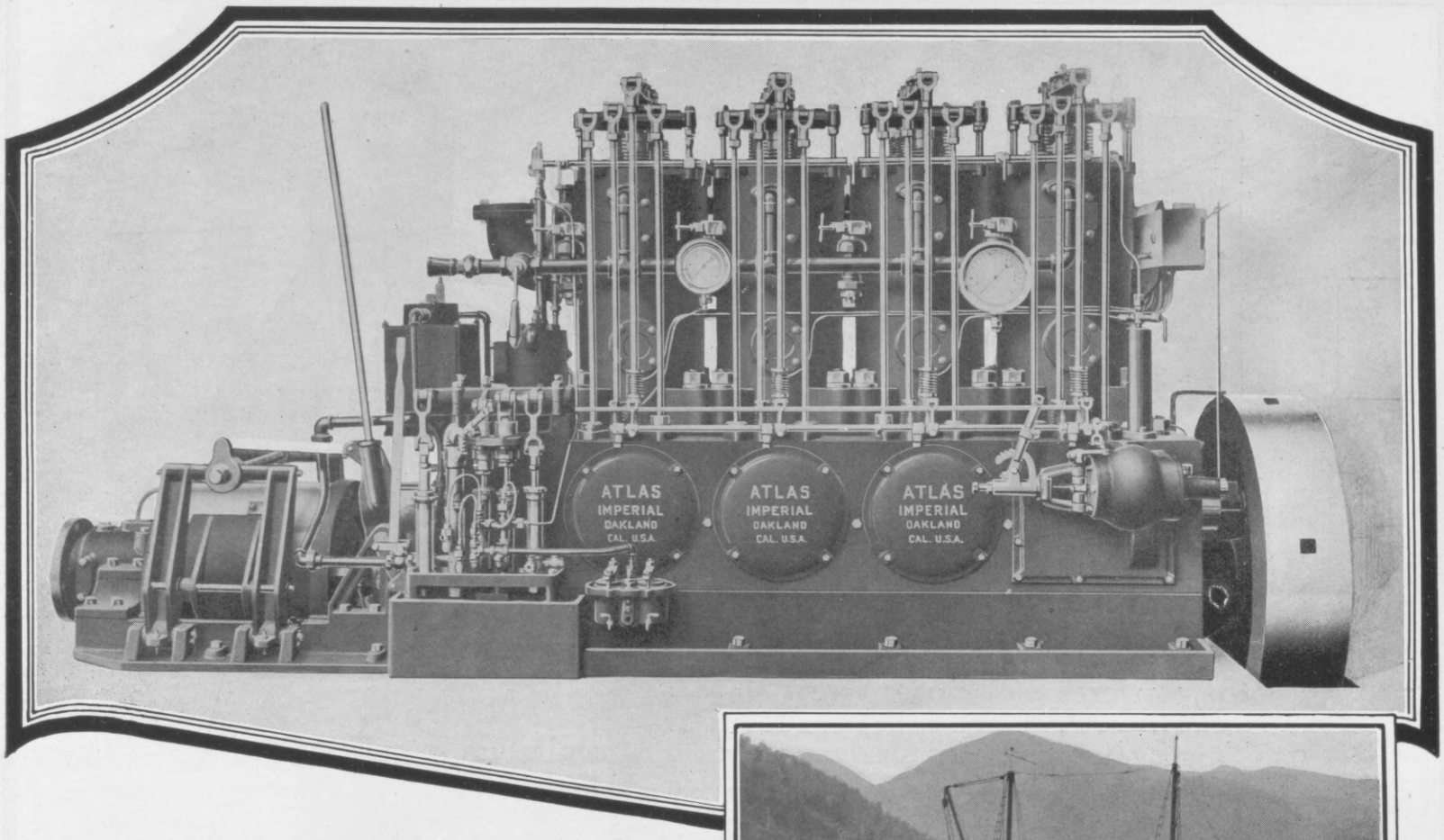

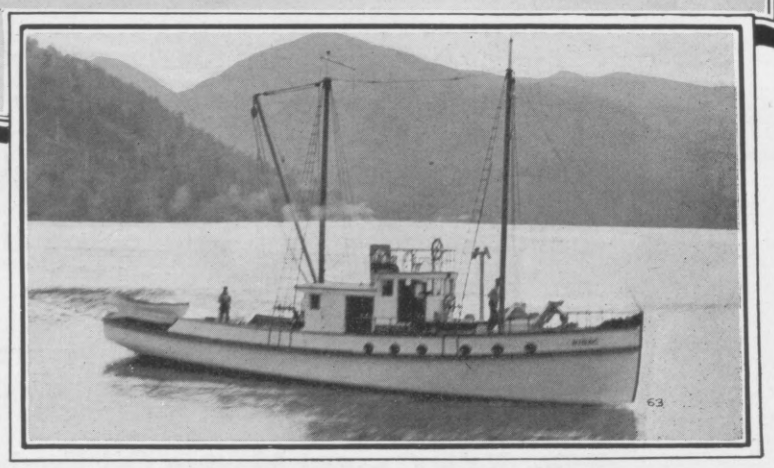

The Canadian Packing Corporation, Ltd., Ceebeecee, B. C., have recently added a successful and economical addition to their fleet of Purse-Seiners in the 75-footer "Ribac." Two duplicate boats are being added of the same general specifications.

FOUR cylinder, four cycle, airless injection type, 110 hp. Atlas-Imperial Diesel Engines are furnishing the power for "Ribac" and her two sister Purse-Seiners—another outstanding example of the general tendency to instal Atlas-Imperial Diesel Engines when absolute dependability and economy of operation are essentials.

BRANCH SALES OFFICES AND REPRESENTATIVES:

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Atlas-Imperial Engine Co.
BANDON, OREGON
F. E. Drane
PAPEETE, TAHITI
Et. Davio

ASTORIA, OREGON
Cook & Foster
SAN PEDRO, CALIF.
Garbutt & Walsh
SAN DIEGO, CALIFORNIA
A. R. Robbins, Marine Engine Works
SYDNEY, N. S. W.
W. Holmes, McMahon's Point

VANCOUVER, B. C.
Ferrier and Lucas
JUNEAU, ALASKA
Chas. G. Warner Company
NEW ORLEANS, LA.
James G. Davis
HABANA, CUBA
Lasa Trading Co.

HONOLULU, T. H.
Honolulu Iron Works
SUVA, FIJI
Morris-Hedstrom, Ltd.
MANILA, P. I.
L. M. Housman & Co.
VALPARAISO, CHILI
Geo. Gompertz, P. O. Box 71

ROSCOE L. HAMBLETON, Inc., No. 3 Canton Road, Shanghai, China.
A. B. DONALD, Ltd., Auckland, N. Z.

ATLAS-IMPERIAL ENGINE CO.

Foot of 19th Ave., Oakland, Cal., U.S.A.

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FALK

Geared Marine Oil Engine

The Falk System of coupling two Oil Engines and a Reduction Gear by means of Falk-Bibby Couplings offers an ideal combination for the conversion of single screw ships.

This System is particularly suitable for installation in existing hulls because the available shafting can be retained.

Falk Oil Engines are simple, reliable and efficient.

Falk Gears deliver all the power they receive in a smooth, even flow and are practically indestructible.

Falk-Bibby Flexible Couplings are rugged and compact and make the gears completely independent of reactions from the engine.

The Falk Geared Marine Oil Engine is backed by one of the soundest companies in America with a remarkable record for building marine turbine reduction gears.

The Falk Corporation—Milwaukee

900 BHP TO 3,600 BHP

FALK

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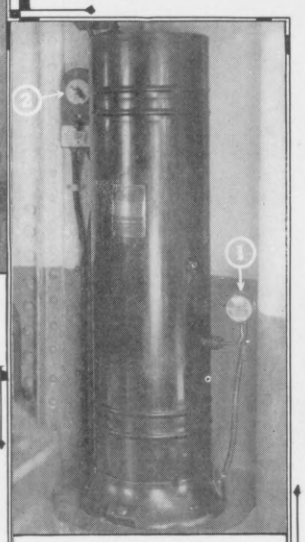
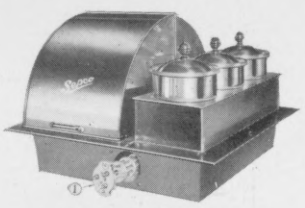
Sepco Electric Heating Equipment

On All Twelve Shipping Board Conversions

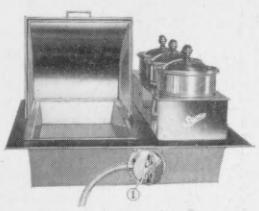
Sepco Electric Coffee Urn for Marine Use.



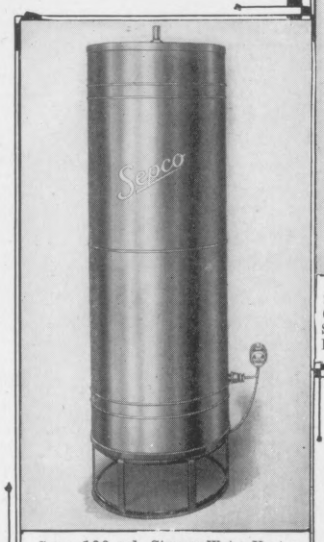
Sepco 15 Gal. Storage Electric Water Heater: (1) Automatic Temperature Control. (2) Sepco Ti-meter.



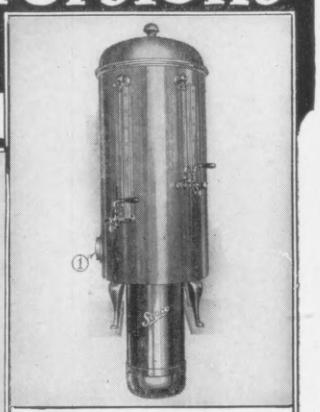
Sepco Electric Food Warmer. (1) Sepco Marine Type Heavy Duty Unit.



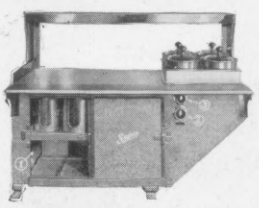
Sepco Special Electric Bain Marie. (1) Heavy Duty Marine Type Heating Unit.



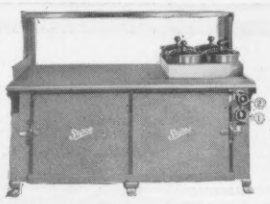
Sepco 100 gal. Storage Water Heater for Marine Use.



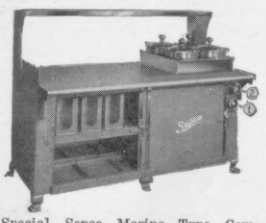
Sepco Automatic Electric Marine Coffee Urn. (1) Special Protected Switch Assembly. (2) Drum Type Heating Unit—Safe, Dry or Wet.



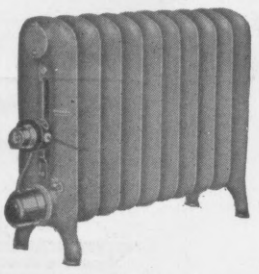
Special Plate Warmer and Bain Marie. (1) Sepco Marine Type Air Heater. (2) and (3) Sepco Heavy-Duty Switches.



Sepco Combination Work and Steam Table with Warming Closet. (1) and (2) Heavy Duty Switches.



Special Sepco Marine Type Combination Work Table and Bain Marie. (1) and (2) Heavy Duty Marine Switches.



Sepco Electric-Steam Radiator for Marine Use.

BECAUSE—

—Sepco heating units operate "dry" or "wet" with equal satisfaction.

—Every Sepco product is designed especially for individual requirements.

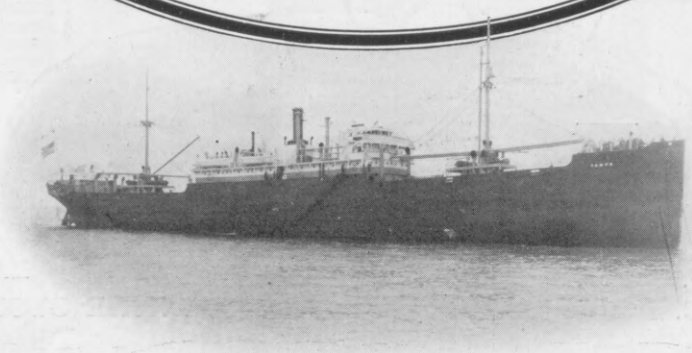
IF YOU HAVE A PROBLEM OF ELECTRIC HEATING with automatic temperature control, let Sepco engineers make a careful study of your particular conditions. Special attention given to marine applications.

TELL US YOUR PROBLEM and we will gladly send an engineer experienced in marine applications to talk with you.

AUTOMATIC ELECTRIC HEATER CO.

1505 Race Street **Philadelphia Pa.**

FACTORIES:—Pottstown, Pa. and Toronto, Canada



U. S. S. B. Motorship "TAMPA" which is furnished with all the Sepco Electric Heating Equipment illustrated above

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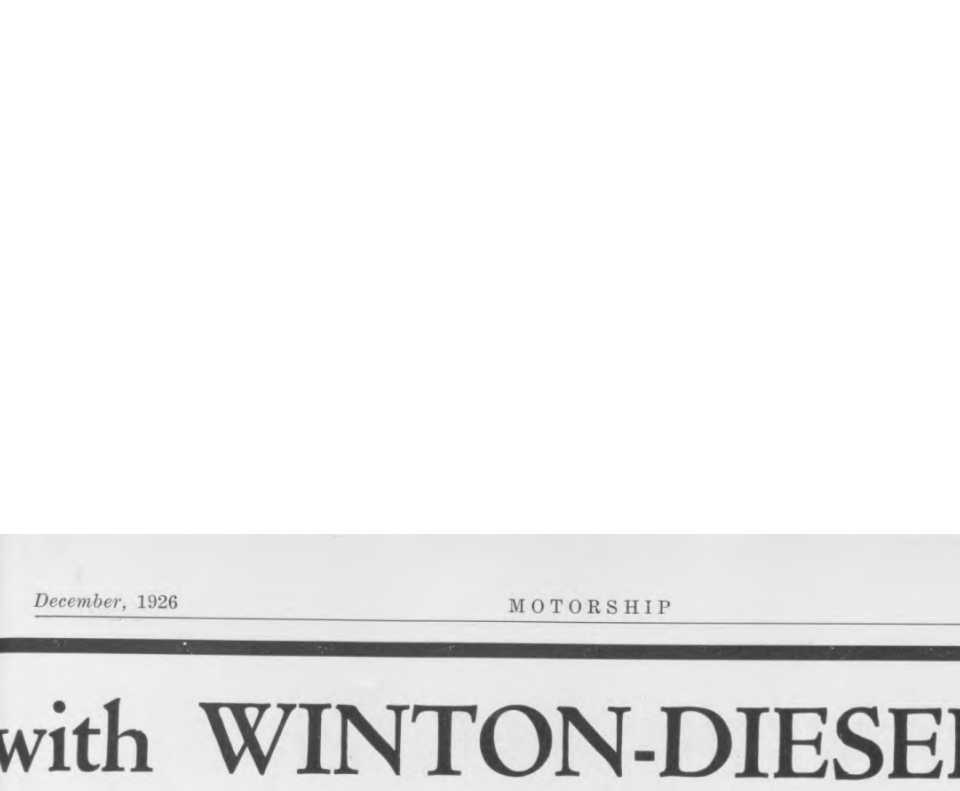
SAVARONA Equipped with WINTON-DIESELS

Length, 185 feet; beam, 27 feet; Draft, 10 feet, 6 inches



Powerful—Efficient—Dependable

The WINTON ENGINE COMPANY

CLEVELAND OHIO — U. S. A.

NEW YORK—A. G. Griese, Inc. 331 Madison Ave. LOS ANGELES—F. G. Bryant, 201 F. W. Braun Bldg.
CLEVELAND—F. C. Erdman Co., Union Trust Bldg. WASHINGTON—R. L. Fryer, 430 Transp't'n Bldg.
NEW ORLEANS—Warren C. Graham Co., 411 Godchaux Bldg. SEATTLE—J. O. Larsen, 19 Colman Dock.
BOSTON—Walter H. Moreton Corporation, 780 Commonwealth Avenue.
MIAMI—Winton Engine Sales Co. Inc., 317 N. E. 1st St., at Biscayne Blvd.

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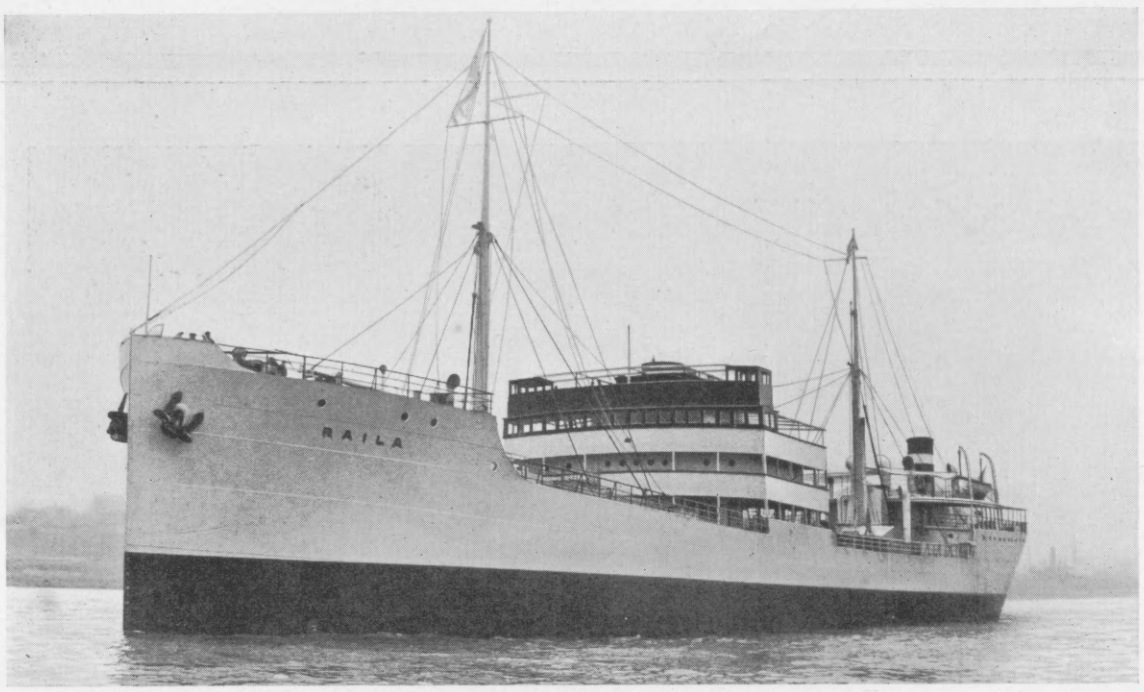
GÖTAVERKEN MOTORSHIPS



No. 28 THE M. S. "RAILA"

7.900 tons d. w.; Owners: Rederiaktieselskapet Ruth, Oslo,
Managing owner: Hagb. Waage

Date of delivery..... March 6th 1926
Power ..... 3.000 I. H. P.
Average speed ..... 12 knots
Daily fuel consumption (incl. auxil.) 10.5 knots
Cruising radius..... 27.000 naut. miles

BUILT AND ENGINED BY:

GÖTAVERKEN

GOTHENBURG - - - SWEDEN

SHIPBUILDERS, SHIPREPAIRERS
BUILDERS OF DIESELMOTORS
MAIN LICENSEES FOR SWEDEN OF THE B & W-MOTORS

FLOATING DRY DOCKS
№1 LIFTING CAPACITY 8,000 TONS
№2 " " 18,000 "
POSTAL & TEL. ADDRESS: **GÖTAVERKEN** GOTHENBURG

GÖTEBORG SWEDEN
AKTIEBOLAGET GÖTAVERKEN

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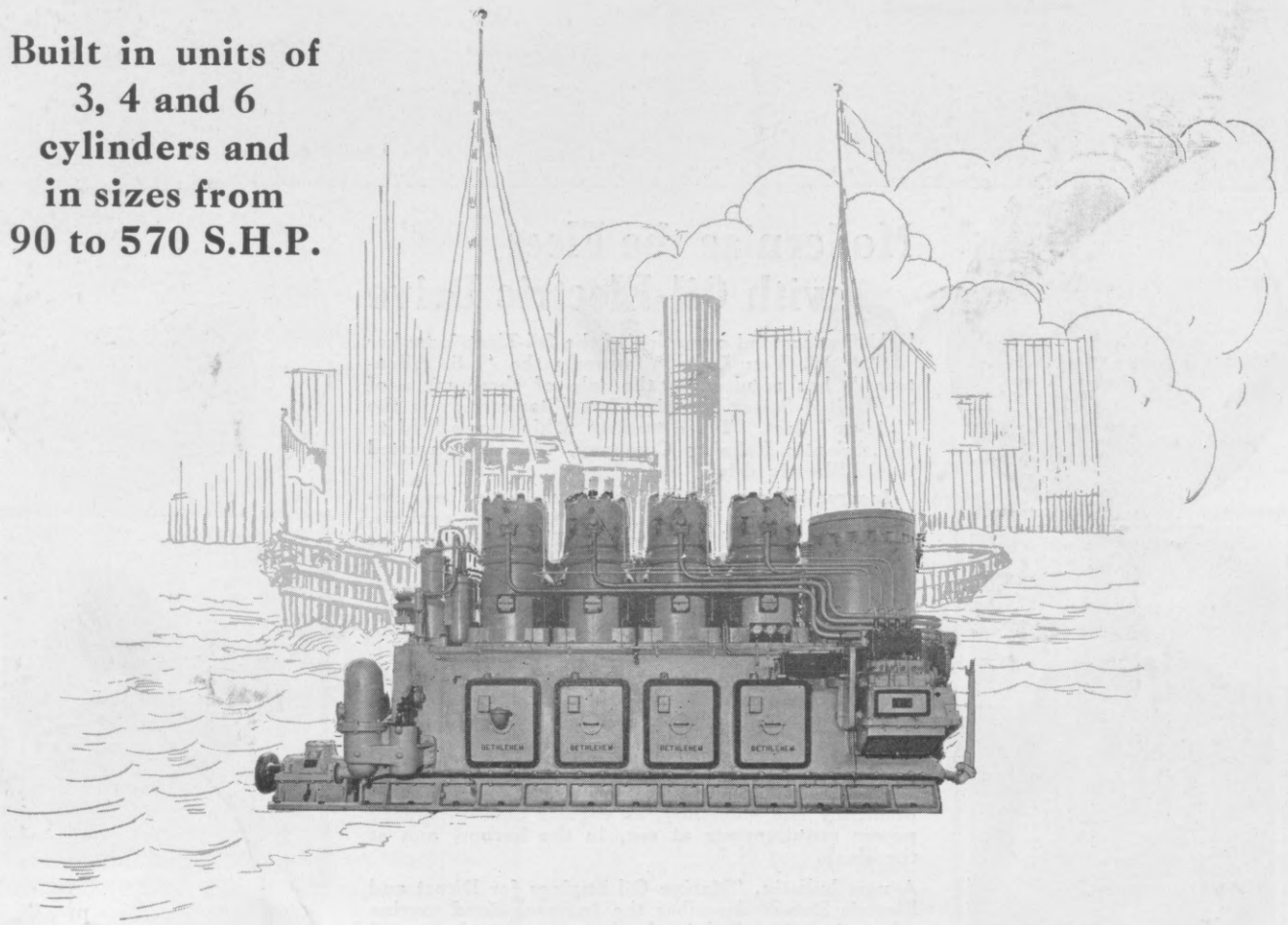
Bethlehem Oil Engines

Two Cycle Airless Injection Type

Built in units of 3, 4 and 6 cylinders and in sizes from 90 to 570 S.H.P.



Have you investigated the advantages of the Bethlehem Oil Engine?

Summarized, they are as follows:

Light weight
Minimum floor space
Economical upkeep
Diesel type
Two-stroke-cycle
Attached scavenging pump
High cylinder compression insuring quick starting
Simple control system
Force feed lubrication
Steady power
Economy of operation

Bethlehem also builds a larger Oil Engine in units of 4, 6 and 8 cylinders, ranging in size from 2,000 to 5,000 S. H. P.

Our engineers will gladly help you solve your problems

BETHLEHEM STEEL COMPANY, *GENERAL OFFICES:* BETHLEHEM, PA.

District Offices:

New York Boston Philadelphia Baltimore Washington Atlanta Pittsburgh Buffalo
Cleveland Detroit Cincinnati Chicago St. Louis San Francisco
Los Angeles Seattle Portland

Behlehem Steel Export Corporation, 25 Broadway, New York City
Sole Exporter of Our Commercial Products

BETHLEHEM

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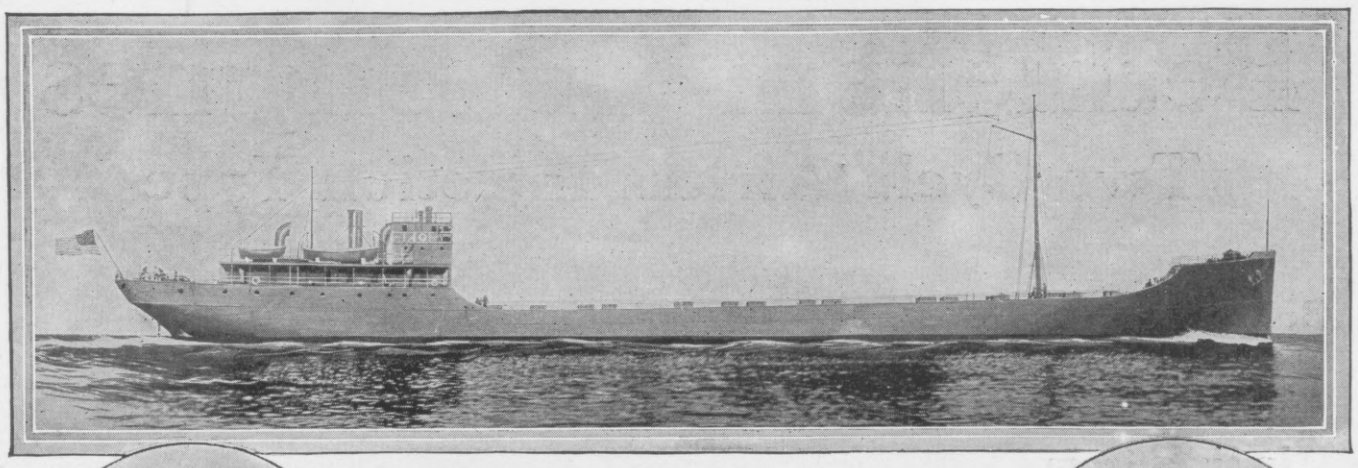
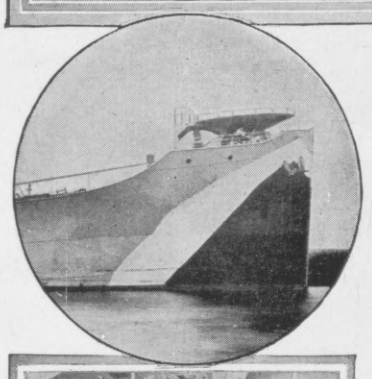
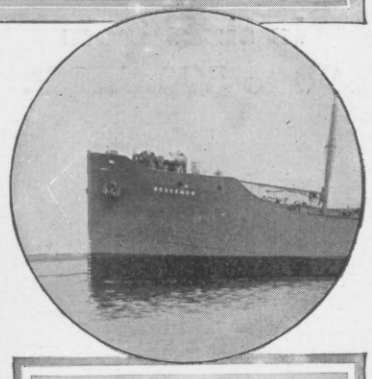






Modernize the Fleet with Oil-Electric Drive

THE successful operation of the Oil-Electric tanker "J. W. Van Dyke," formerly the "S.S. Allentown," has resulted in the sale of three more of the United States Shipping Board tankers from the "laid-up" fleet. These tankers, which were sold to the Atlantic Refining Company, will be converted to Oil-Electric drive.

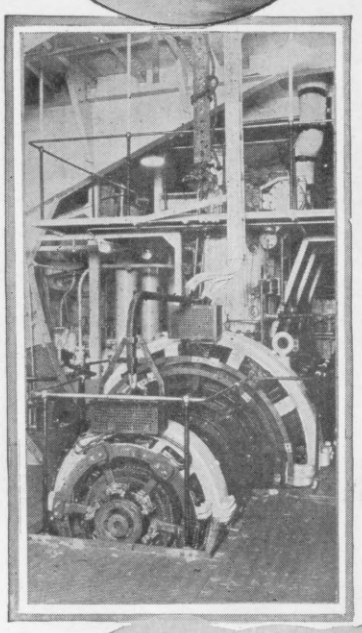
Ingersoll-Rand Oil Engines have again been selected for driving the main generators and exciters, and Ingersoll-Rand Oil Engines will be installed for driving the auxiliary generators.

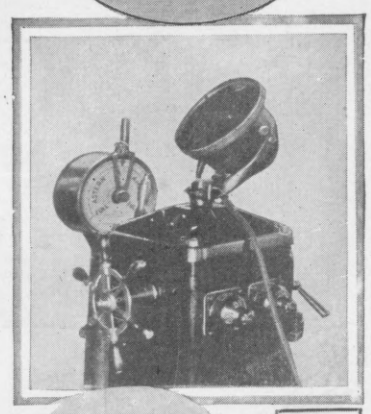
Oil-Electric drive, with its fuel economy, flexibility, pilot house control, and modern auxiliaries, provides the operating features needed to place more of the U. S. S. B's. idle ships in service.

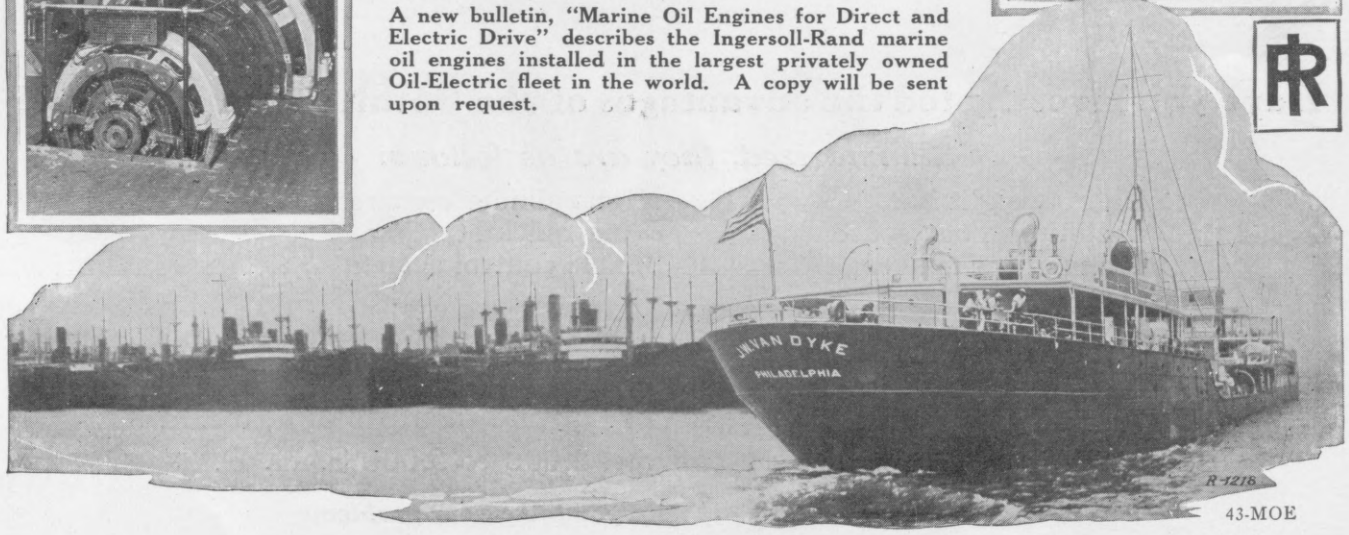
Passenger and cargo ships, freighters, and additional tankers can be modernized by the installation of Oil-Electric drive, a form of propulsion that is distinctly an American development.

The manipulation of Oil-Electric power provides the numerous combinations necessary to meet, economically and efficiently, all regular and emergency power requirements at sea, in the harbor, and at the dock.

A new bulletin, "Marine Oil Engines for Direct and Electric Drive" describes the Ingersoll-Rand marine oil engines installed in the largest privately owned Oil-Electric fleet in the world. A copy will be sent upon request.







R-1218

43-MOE

INGERSOLL-RAND COMPANY-11 BROADWAY, NEW YORK CITY.

Offices in principal cities the world over.

FOR CANADA REFER-CANADIAN INGERSOLL-RAND CO. LIMITED, 260 ST. JAMES STREET, MONTREAL, QUEBEC.

Ingersoll-Rand

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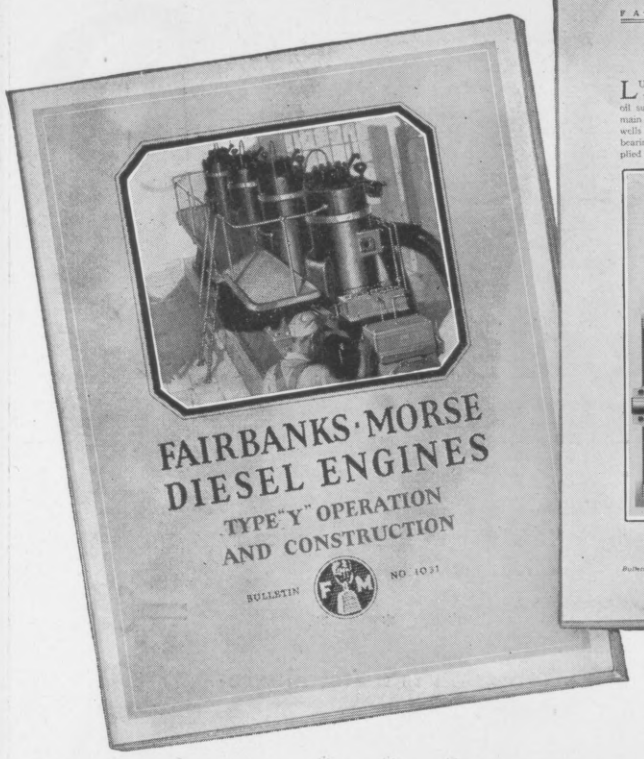
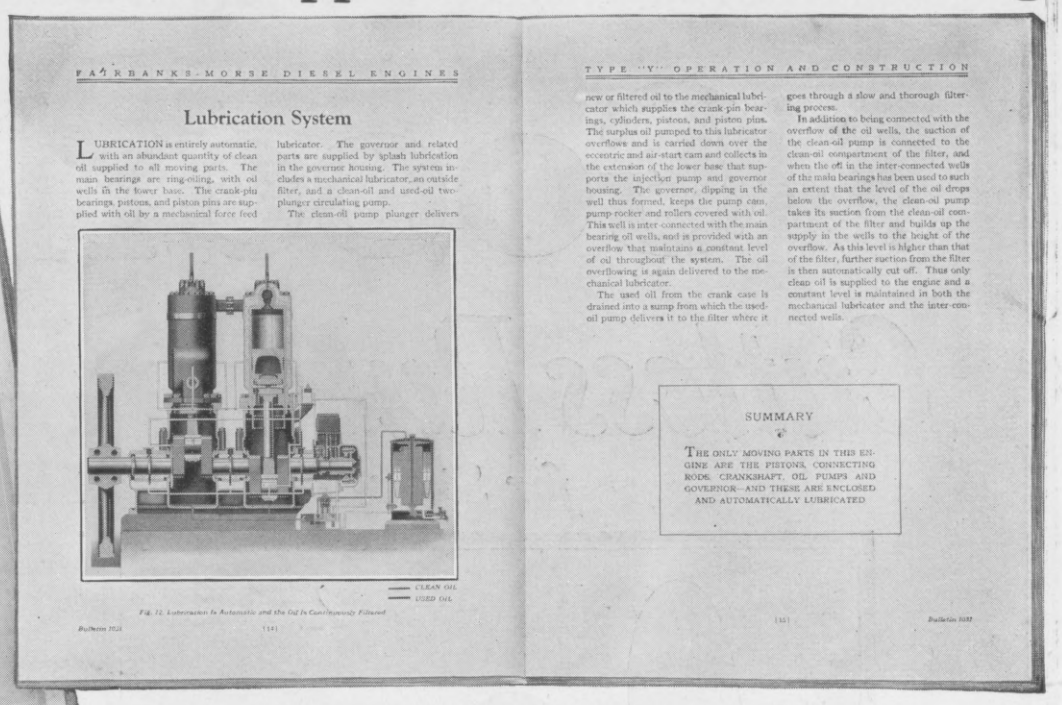
all over the world Madison-Kipp Lubricators are leading




FAIRBANKS-MORSE DIESEL ENGINES

Lubrication System

LUBRICATION is entirely automatic, with an abundant quantity of clean oil supplied to all moving parts. The main bearings are ring-oiling, with oil wells in the lower base. The crank-pin bearings, pistons, and piston pins are supplied with oil by a mechanical force feed lubricator. The governor and related parts are supplied by splash lubrication in the governor housing. The system includes a mechanical lubricator, an outside filter, and a clean-oil and used-oil two-plunger circulating pump.

The clean-oil pump plunger delivers

CLEAN OIL
USED OIL

Fig. 12. Lubrication Is Automatic and the Oil Is Continuously Filtered

Bulletin 1031 141

TYPE "Y" OPERATION AND CONSTRUCTION

new or filtered oil to the mechanical lubricator which supplies the crank-pin bearings, cylinders, pistons, and piston pins. The surplus oil pumped to this lubricator overflows and is carried down over the eccentric and air-start cam and collects in the extension of the lower base that supports the injection pump and governor housing. The governor, dipping in the well thus formed, keeps the pump cam, pump-rocker and rollers covered with oil. This well is inter-connected with the main bearing oil wells, and is provided with an overflow that maintains a constant level of oil throughout the system. The oil overflowing is again delivered to the mechanical lubricator.

The used oil from the crank case is drained into a sump from which the used-oil pump delivers it to the filter where it goes through a slow and thorough filtering process.

In addition to being connected with the overflow of the oil wells, the suction of the clean-oil pump is connected to the clean-oil compartment of the filter, and when the oil in the inter-connected wells of the main bearings has been used to such an extent that the level of the oil drops below the overflow, the clean-oil pump takes its suction from the clean-oil compartment of the filter and builds up the supply in the wells to the height of the overflow. As this level is higher than that of the filter, further suction from the filter is then automatically cut off. Thus only clean oil is supplied to the engine and a constant level is maintained in both the mechanical lubricator and the inter-connected wells.

SUMMARY

THE ONLY MOVING PARTS IN THIS ENGINE ARE THE PISTONS, CONNECTING RODS, CRANKSHAFT, OIL PUMPS AND GOVERNOR—AND THESE ARE ENCLOSED AND AUTOMATICALLY LUBRICATED

141 Bulletin 1031

The Madison-Kipp Lubricator is standard on all Fairbanks-Morse Diesel Engines.

The Importance of Lubrication

> 70% *of all Oil Engines built in America and an appreciable percentage of foreign built engines are equipped with Madison-Kipp Lubricators.*

EVEN the layman could not glance through the catalogs of Diesel Engine Builders without being struck by the attention that is paid to Lubrication.

No other phase of Diesel Engine Building, except fuel injection, is given such complete and thorough treatment as Lubrication.

Diesel Engine builders, engineers and users alike understand the importance of Engine Lubrication.

In the light of these facts the tremendous increase in the number of engines equipped with Madison-Kipp Lubricators during the past two years becomes of utmost importance.

All over the world the trend of lubrication is toward the Madison-Kipp Lubricator. 70% of the Oil Engines built in America and a number of foreign built, are Madison-Kipp equipped.

In any field such complete predominance would be exceptional. Coming as it does in the Engine field where the importance of lubrication has been so long and so thoroughly recognized these facts can point to but one conclusion...namely —that in the Madison-Kipp, Oil Engine designers and builders have found not only the right type of Lubrication, but also the right lubricator.

Our Lubrication Engineering Service is always available for co-operation in your lubrication problems.

FRESH OIL

Madison-Kipp CORPORATION *Lubricators*

Lubrication Specialists Since 1898 *Madison, Wisconsin U.S.A.*

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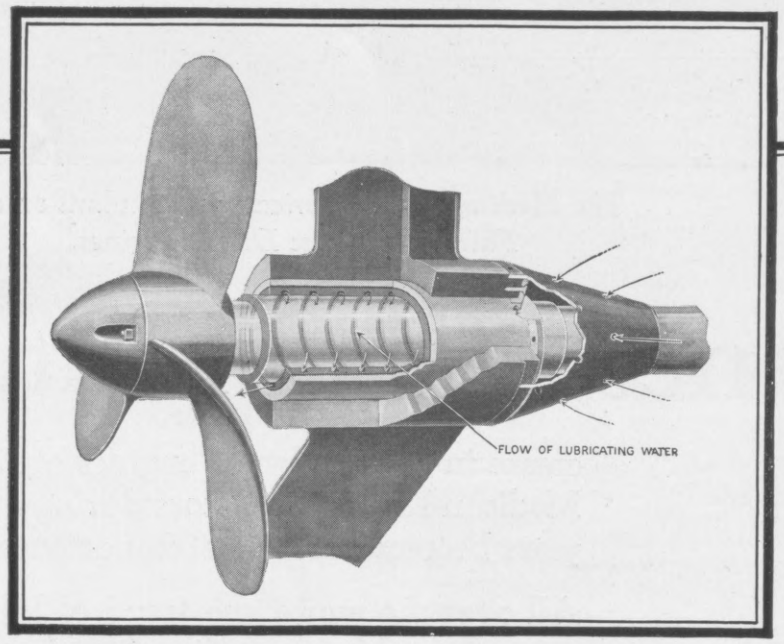
Goodrich

Cutless Rubber Bearings

for Stern Tubes and Struts



Shaft scoring is practically eliminated.

* * *

Vibration is materially reduced.

* * *

Bearing life is prolonged.

* * *

You make fewer bearing replacements and a consequent gratifying saving in drydock expenses.

The rubber-surface, water-lubricated bearing that has set a new standard of service—

SCIENCE has taken wonderful strides in methods of toughening rubber.

A truck tire made of steel would not last nearly so long as the one of rubber in general use today. Rubber has the ability to yield to abrasion—it absorbs wear—metal resists rigidly and is more quickly worn down.

Goodrich has applied this knowledge to Cutless Bearings—and vastly superior bearing is the result.

The surface is unusually tough rubber, which permits water lubrication, and which wears far beyond lignum vitae, bronze or babbitted metals.

Cutless Bearings have proved their superiority on hundreds of craft, from runabouts to tankers, and the number is increasing constantly as those advantages become realized.

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

CUTLESS BEARING DISTRIBUTORS

New York City
Topping Bros.

Buffalo, N. Y.
B. F. Goodrich Rubber Co.
197 Van Rensselaer Street

Boston, Mass.
Walter H. Moreton Corp. and United Fisheries Co.

Gloucester, Mass.
United Fisheries Co.

Chicago, Ill.
B. F. Goodrich Rubber Co.
1925 S. Michigan Avenue

Detroit, Michigan
B. F. Goodrich Rubber Co.
4809 Woodward Avenue

Philadelphia, Pa.
Marine Equipment & Supply Co.

Mobile, Alabama
A. K. Engineering Co.

Houston, Texas
A. K. Engineering Co.

New Orleans, Louisiana
A. K. Engineering Co.

Jacksonville, Fla.
Gibbs Gas Engine Co. of Florida

Los Angeles, Calif.
B. F. Goodrich Rubber Co.
1386 E. 7th Street

San Francisco, Calif.
B. F. Goodrich Rubber Co.
650 Second Street

Seattle, Washington
B. F. Goodrich Rubber Co.
115 King Street

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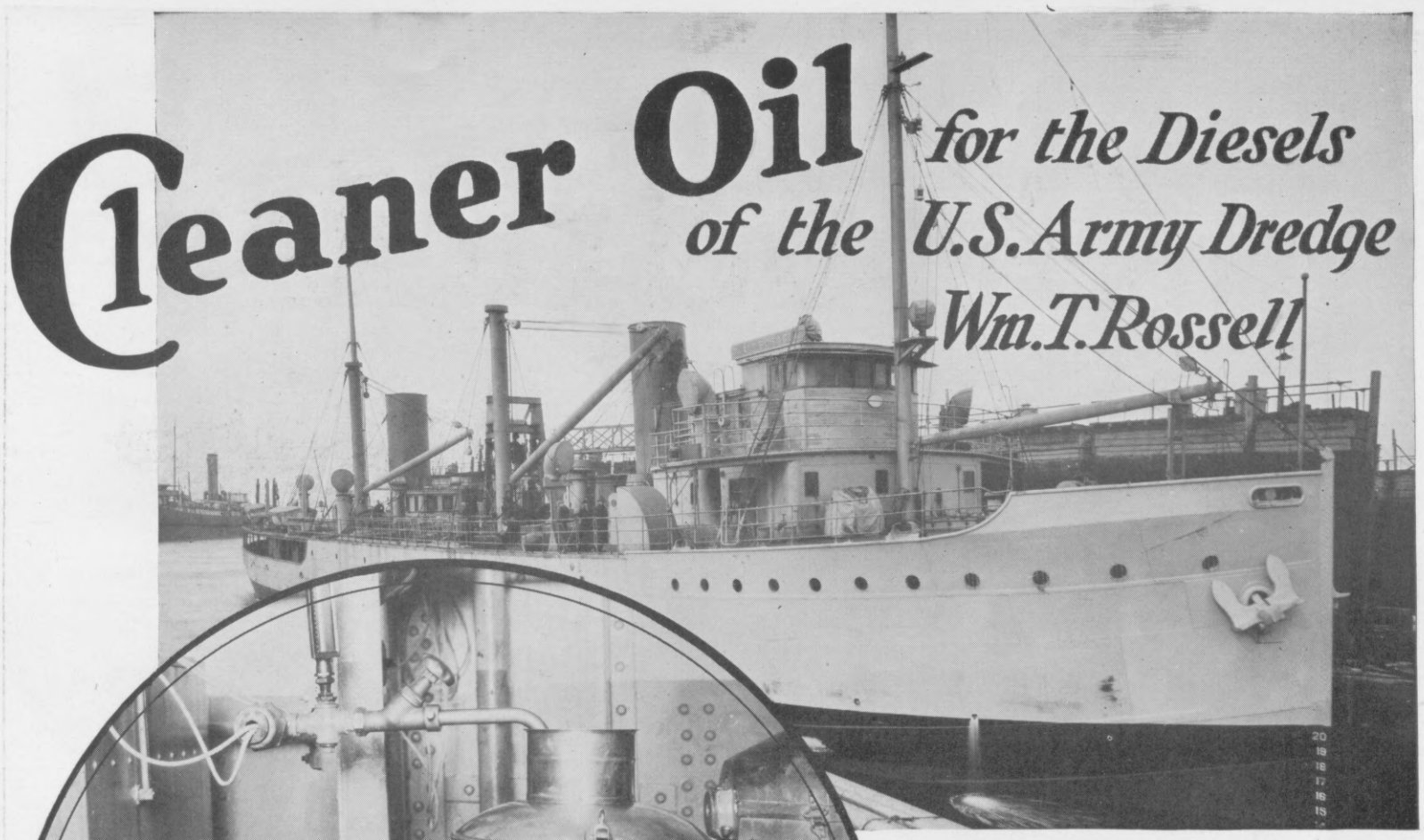
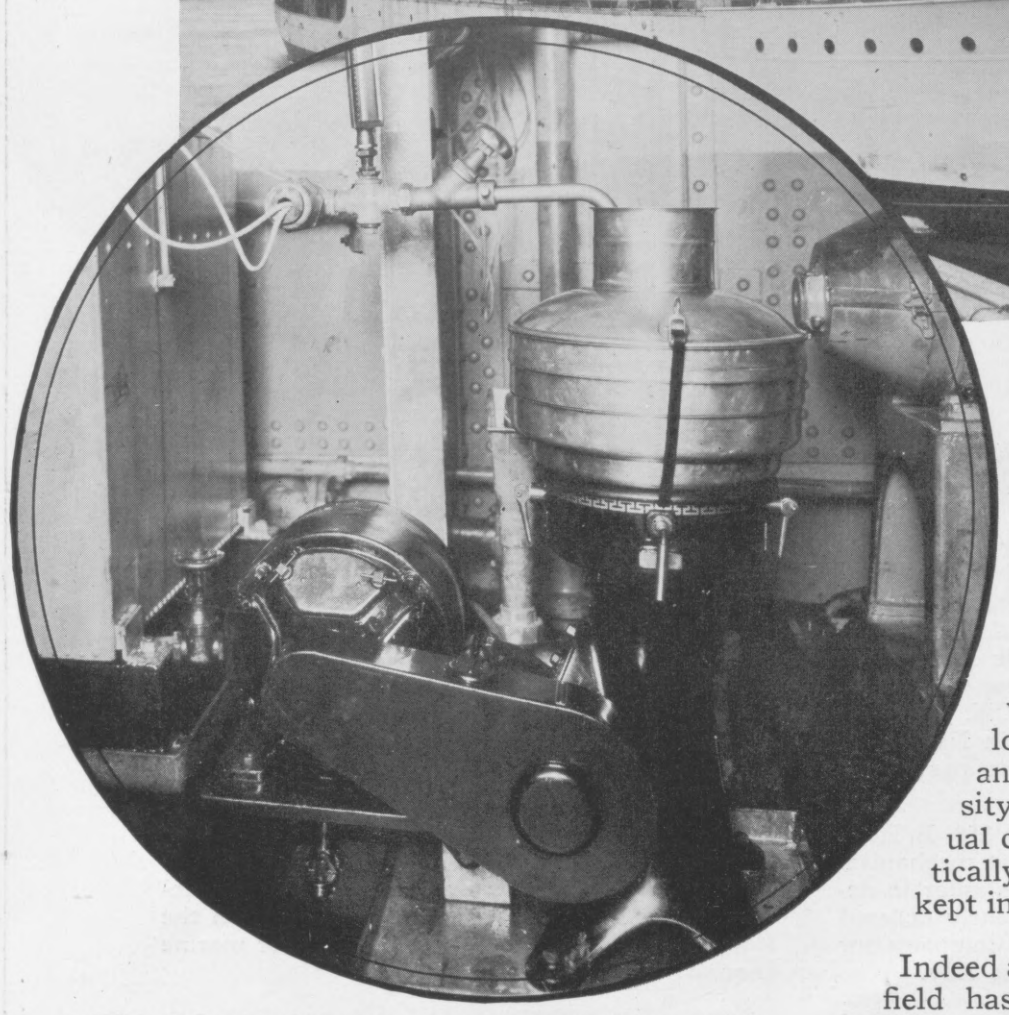
Cleaner Oil for the Diesels of the U.S. Army Dredge Wm. T. Rossell





DIFFERENT types of De Laval Purifiers are furnished for fuel and lubricating oil service. The De Laval Vapor-Tight Fuel Oil Purifier unlike the lubricating oil machine on the "Rossell," which is shown above, is built with closed flexible hose connections with quick-opening unions at inlet and outlet points and gasketed cast aluminum covers. This construction makes the machine vapor-tight, so that it is entirely safe to purify the oil while at a temperature higher than its flash-point, as is often necessary in burning low-gravity oils.

In order that their McIntosh and Seymour Diesel engines may have cleaner lubricating oil, De Laval Oil Purifiers have just been installed on the U. S. Army Dredges "Wm. T. Rossell" and "W. L. Marshall."

Engineers on vessels of every type have found that with the cleaner oil produced by the De Laval, bearing wear is materially reduced, sludge no longer accumulates in the oil grooves and channels of the engine, the necessity for disassembling the unit for manual cleaning of the oiling system is practically eliminated, and the same oil can be kept in service indefinitely.

Indeed a leading publication in the oil engine field has recently shown that a group of Diesels using centrifugally purified lubricating oil produces power at 27% lower cost than another group which does not have the advantage of this more perfect lubrication.

Mail the coupon for full details

THE DE LAVAL SEPARATOR CO.
165 Broadway, New York 600 Jackson Blvd., Chicago
DE LAVAL PACIFIC COMPANY, SAN FRANCISCO

De Laval Oil Purifiers

Please send Bulletin containing further information regarding the De Laval Purifier as checked below:

☐ Purification of lubricating oil.

☐ Purification of fuel oil.

Name .....

Address .....

M-629D

Company .....

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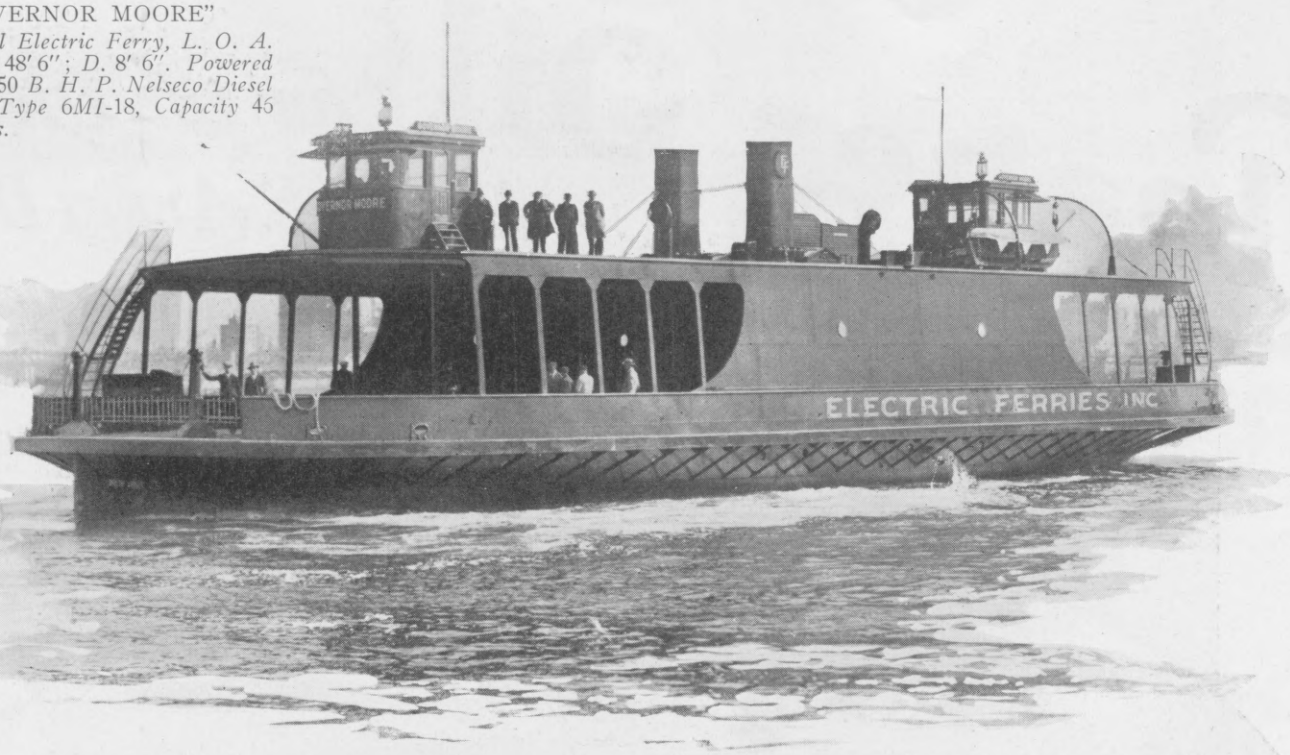
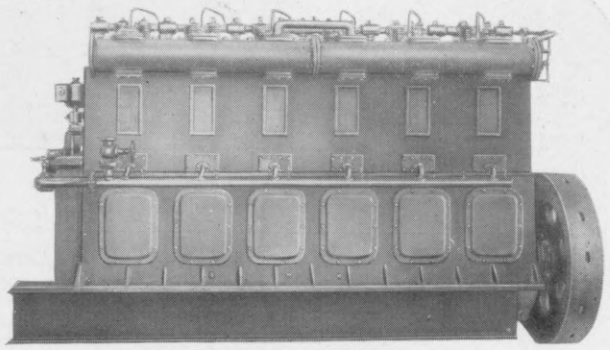
"GOVERNOR MOORE"
New Diesel Electric Ferry, L. O. A. 155' 0"; W. 48' 6"; D. 8' 6". Powered with two 350 B. H. P. Nelseco Diesel Engines. Type 6MI-18, Capacity 45 automobiles.





Nelseco Diesel Engine of latest mechanical injection type, 350 B. H. P. at 280 R. P. M., Type 6MI-18.

First Diesel Electric Ferries in New York Harbor

A FLEET of six Diesel Electric Ferries has just been put in service between West 23rd Street, Manhattan and Weehawken, N. J. These vessels are the first of their type in New York —capacity 50 automobiles, no foot passengers carried.

Each ferry is powered with two 350 B. H. P. Nelseco Diesel Engines of the latest mechanical injection type. These engines are similar in design to the 24 Nelseco Diesels recently ordered by the Southern Pacific Railroad Company for use in ferry boats on San Francisco Bay.

You should ride on and inspect these new Diesel ferries for they are as radical a change from steam-propelled vessels as the first steam trains were over horse-drawn coaches.

You will be impressed with the smooth flow of power and the positive engine control just as the owners are impressed with the lower operating costs and the decreased personnel.

Nelseco engineers will gladly arrange an inspection trip and give you astonishing figures on the low operating cost of Diesel Engines for marine service. Write for Pamphlet MS.

NEW LONDON SHIP & ENGINE COMPANY
Groton, Conn., U. S. A.

Chicago Representative
H. JACOBSEN
25 North Dearborn Street

New York Sales Office
247 Park Avenue, New York

West Coast Representative
KING-KNIGHT CO.
Seattle, San Francisco, Los Angeles

NELSECO

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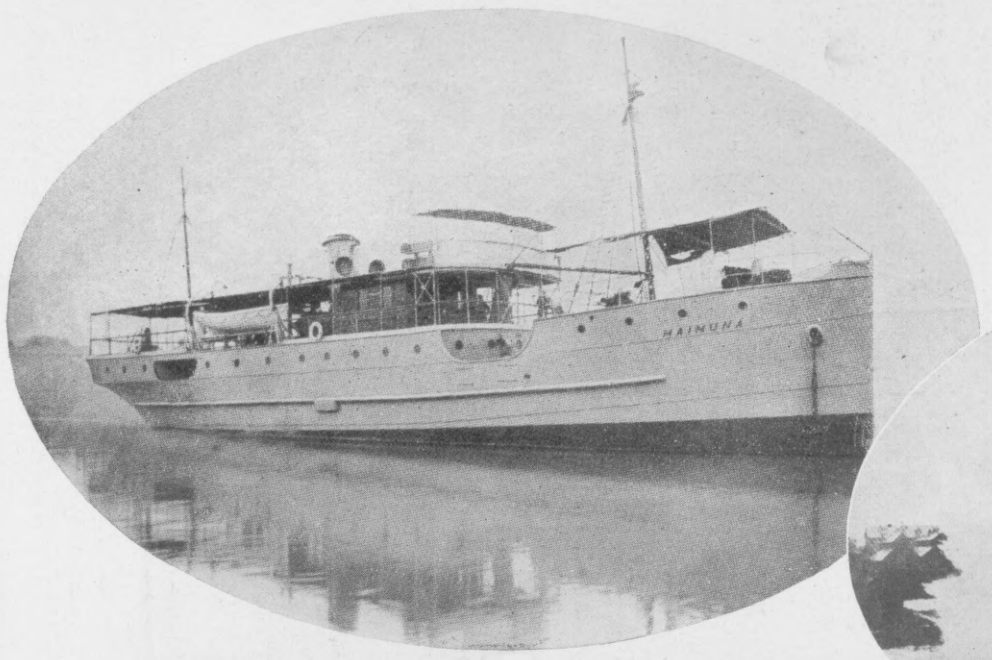
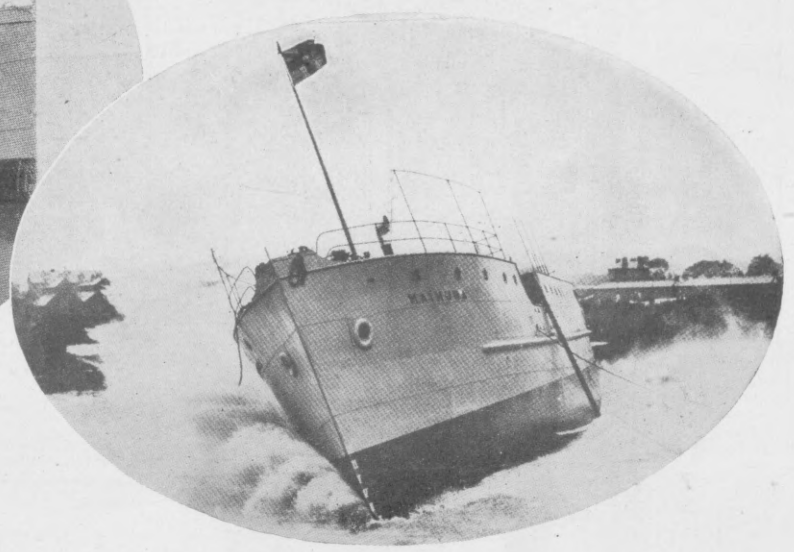
BOLINDERS
ENGINES FOR LARGE YACHTS





The Rajah of Sarawak's Yacht and Passenger Vessel "Maimuna," Powered with a 350 s.hp. Bolinder Oil Engine

THE design of the Bolinder oil engine, which engine powers so many thousand of the world's commercial craft, particularly lends itself to the main and auxiliary machinery of large yachts.

Among the many vessels of this type so equipped with Bolinder engines is the Rajah of Sarawak's new 140 ft. yacht and passenger carrying vessel MAIMUNA, which has a four-cylinder, 350 s.hp. unit on the propelling shaft, a 12 b.hp. and a 7 b.hp. Bolinder auxiliary oil engine. There also is a 6 b.hp. at 900 r.p.m. Bolinder light-weight oil engine propelling one of the two lifeboats.

"The Best the World Produces"

Engines and Parts in Stock—Service Dept.

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Pacific Coast Representatives: Richard Froboese Company, 83 Marion Street, Seattle, Washington

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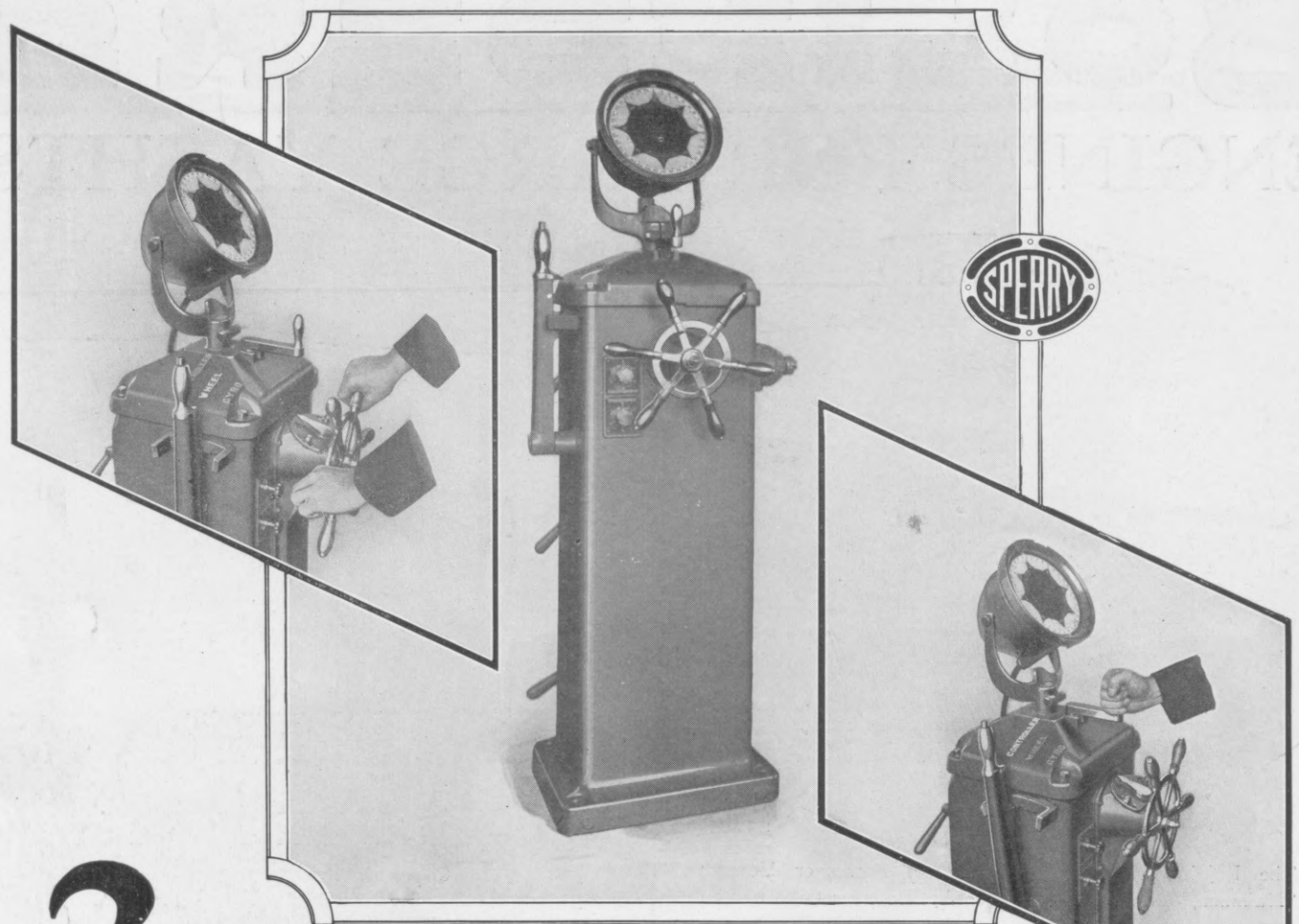

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With the Gyro-Pilot any one of these three steering systems is instantly available by moving the selecting lever to the system desired. WHEEL is a full follow-up steering system with the usual relation of rudder movement to steering wheel motion. GYRO is automatic steering, with which the wheel becomes the "Course Changer." CONTROLLER is a simple two-way on-and-off contact system—Controller to right for right rudder motion and to left for left rudder motion.

If you own, operate, design or command ships, you should learn more about this machine which is giving incomparable results on ships of widely varied types. The fourteen Shipping Board, Diesel conversion ships, the M/S GULF PRIDE, the British Tankers PLUME and PULPIT POINT, the S/S MALOLO and many others are now being equipped with this type of Metal Mike (Gyro-Pilot).

A "Metal Mike" (Gyro-Pilot) for every type of steering gear.

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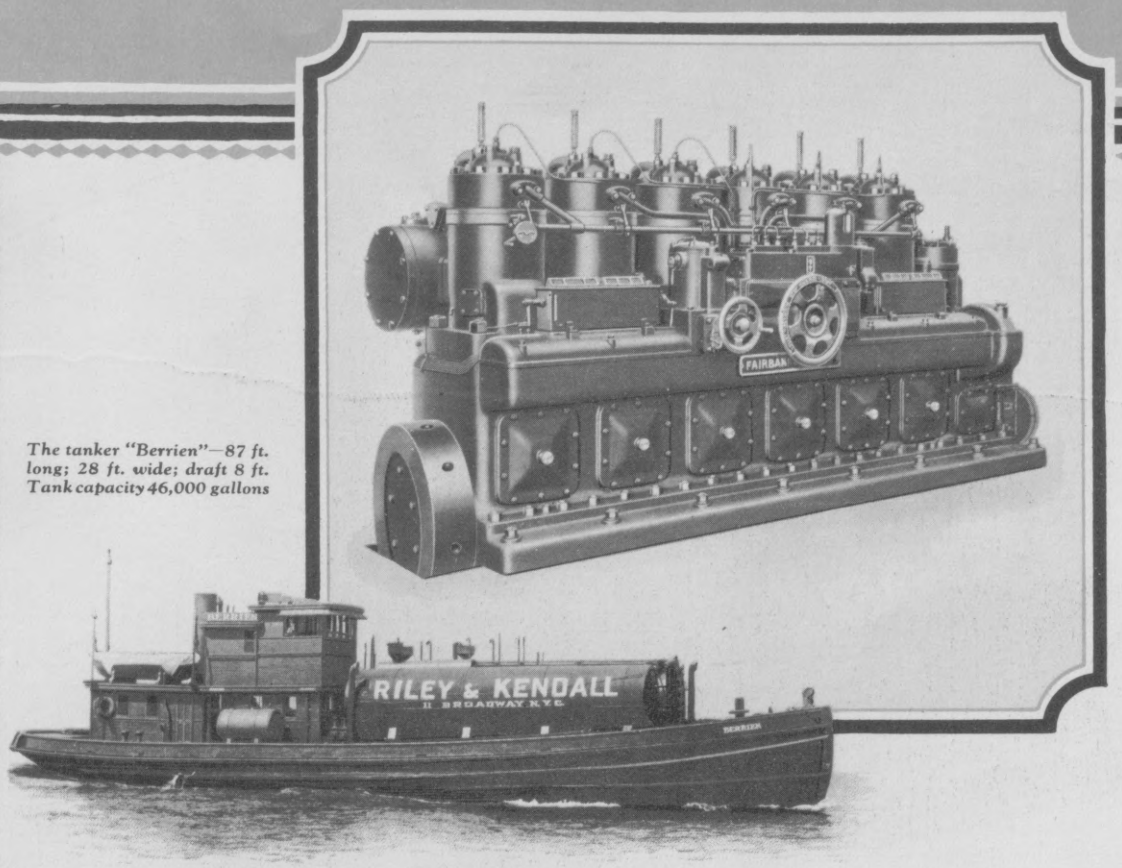

The tanker "Berrien"—87 ft. long; 28 ft. wide; draft 8 ft. Tank capacity 46,000 gallons

Only F-M dependability would do

Transporting gasoline and other petroleum products in the crowded waters of the New York harbor is a service that is filled with exacting requirements. That is why the tank boat "Berrien," engaged in this type of service, is a particularly interesting addition to that growing fleet of Fairbanks-Morse equipped boats that dot the New York harbor.

The "Berrien" was recently put into service by Riley & Kendall of New York who are pioneers in the transportation of petroleum products around the New York harbor and adjacent waters.

Naturally the owners of this tanker placed dependability foremost in their choice of propulsion power, and for their guidance they had the experience with Fairbanks-Morse Engines on two other tankers which they had been operating a considerable time. They were impressed also with the exceptional maneuvering ability of the F-M Diesel—a quality all-important in these congested waters. Hence they chose for the "Berrien" a Fairbanks-Morse Diesel of 180 hp.—and both the trial run and the subsequent highly satisfactory service of this engine proved the wisdom of their decision.

No expense was spared to make this boat the safest and most efficient of its type in the harbor. Every safety precaution has been taken. Engine exhaust, electric light outlets, switches—all are spark proof. Cargo is carried in nine cylindrical steel tanks, three on deck and six in the hold—having a total capacity of 46,000 gallons.

The matchless performance which the F-M Diesel is giving on boats like this tanker is causing more and more operators to realize that only F-M dependability will do!

FAIRBANKS, MORSE & CO., *Chicago*

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DIESEL ENGINES

The product of experience

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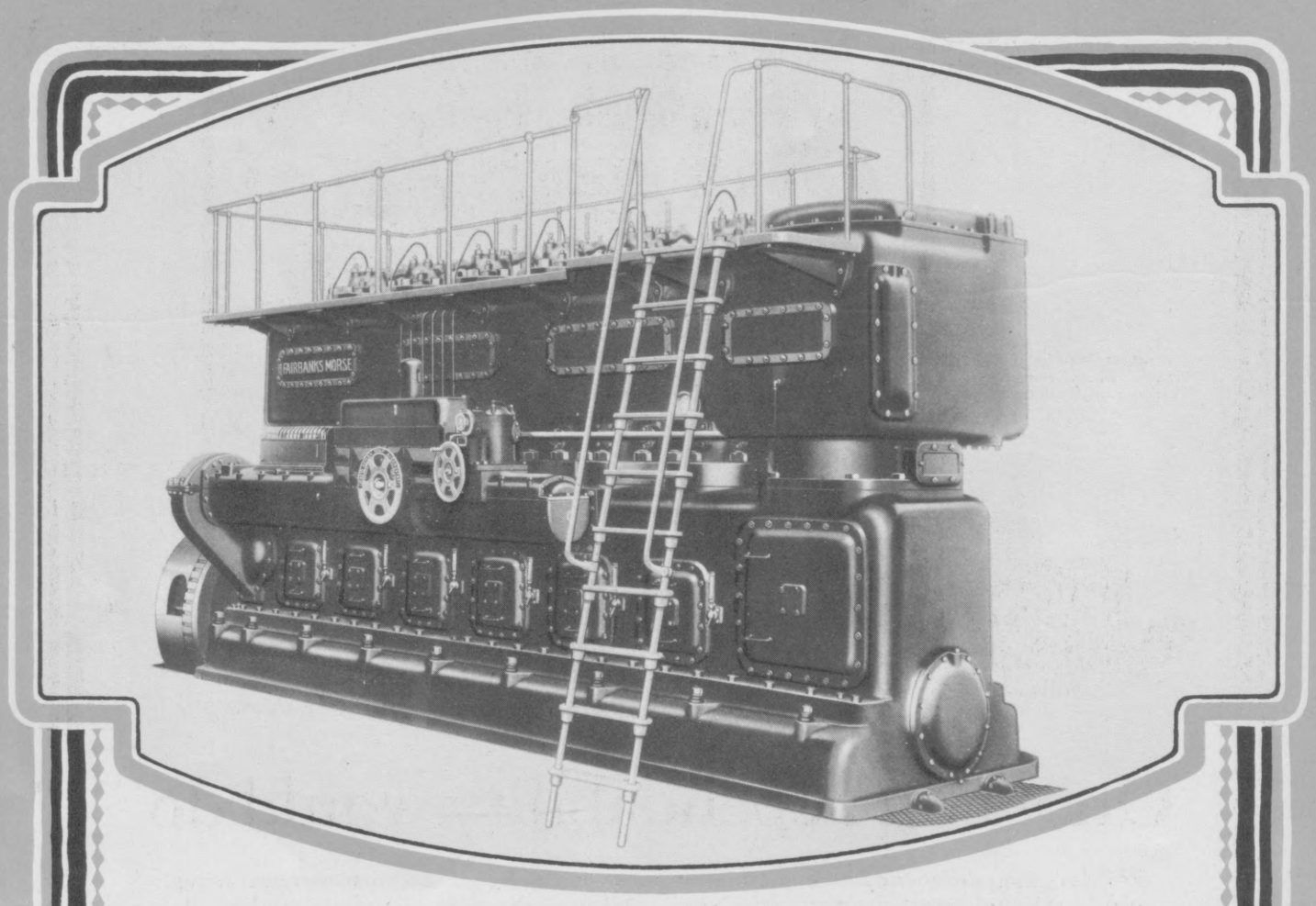

Larger Units

—but the same simplicity and dependability

Whether the vessel has moderate power requirements, such as the tank boat described on the preceding page, or large power requirements met by the new larger F-M Diesels such as the 720-hp. Diesel illustrated above, Fairbanks-Morse Diesel power offers that indispensable quality that grows ever more apparent the longer this engine is in service—*absolute dependability.*

Simple—compact—accessible—sturdy—the F-M Engine, whatever size, is all of this. Product of the minds of men internationally known for their pioneer work on the two-stroke-cycle principle—men who have devoted their lives to its development and perfection—the Fairbanks-Morse Diesel Engine gives you at once the best—and the simplest—in the Diesel design that over a million operating Diesel horsepower today has proved correct.

The Fairbanks-Morse Marine Diesel is built in the following sizes: 60 hp.; 80 hp.; 120 hp.; 180 hp.; 240 hp.; 360 hp.; 480 hp.; 600 hp.; 720 hp. Write for descriptive bulletins.

FAIRBANKS-MORSE
DIESEL ENGINES

The product of experience

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Diesel Fuel Oil

The vast organization and scope of the Standard Oil Company (New Jersey) make it possible to offer shipping interests worldwide facilities for bunkering with **"Standard" Diesel Fuel Oil.** Our Diesel Oil is a highly refined and clean product, suitable for use in all full Diesel engines. It is recommended by the leading Diesel motor manufacturers.

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One view of Large Ring Division where Quality Piston Rings are made.

Promptness in filling orders is only a small part of the service to Engine Builders.

The real service is the unfailing dependability of Quality Piston Rings to withstand most severe usage and to maintain uniform compression.

Built in sizes up to 72 inch diameters and regularly specified by leading builders of internal combustion engines.

Large Ring Division

The Piston Ring Company

Muskegon, Michigan

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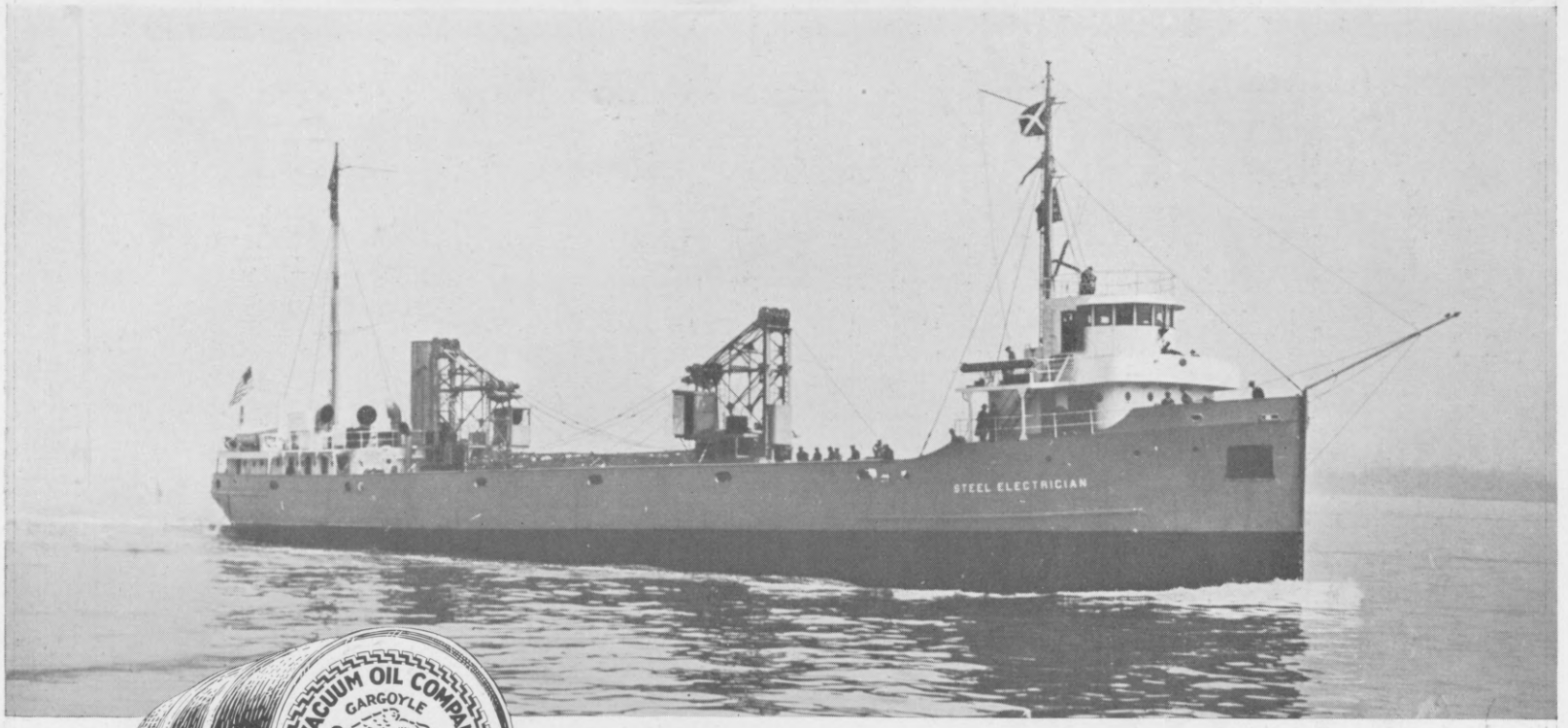
Gargoyle D.T.E. Oils lubricate Diesel Engines in every type of Motorship



M.S. "Steel Electrician" third motorship of U. S. Steel Products Co. 1694 tons gross. Diesel-electric propulsion.

—in Great Lakes Ships

THE navigation problems peculiar to the Great Lakes are problems which usually lead straight down to the engine room.

Flexibility of control in the rivers and canals; positive control in still water and strong currents; quick maneuvering in locks and docks—all these require instant response in engine operation.

The *"Steel Electrician,"* commissioned last summer, was constructed solely to meet Great Lakes navigation. The complete control of the propeller is effected from the pilot house, which gives this vessel wonderful maneuvering qualities in the rivers and canals and positive control in still waters and strong currents.

In the engine room the problem is simply one of absolute reliability of operation. This responsibility rests largely upon lubrication.

Gargoyle D.T.E. Oils were used in her dock trials, and on her maiden voyage. The new Lakes ship made straight to Montreal where she loaded a cargo and started regular service.

Gargoyle D.T.E. Oils insure instant response to every operating demand because their high lubricating qualities maintain complete, correct lubrication under every operating condition.

Supplies in more than 300 of the leading ports of the world.

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D.T.E.
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Vacuum Oil Company — *Specialists in the manufacture of high-grade lubricants for every class of machinery. Obtainable everywhere in the world.* — New York, U. S. A.

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Utilizing

Diesel-developed Power

THE Diesel Engine, with its high thermal efficiency, *develops* power more economically than any other comparable device.

Electricity *applies* power more efficiently than any other agency.

The combination of Diesel economy and electric efficiency and flexibility is logical and practical. That is the reason for the growing trend toward Diesel-Electric propulsion.

Diesel-Electric has proved its economy in many classes of marine service. Within the past five years, Westinghouse electric propulsion equipment has been installed in six yachts, eleven tugs, four hopper dredges, and four tankers, as well as in ferries, cargo ships and fireboats.

Most Diesel-Electric ships are Westinghouse-equipped.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of
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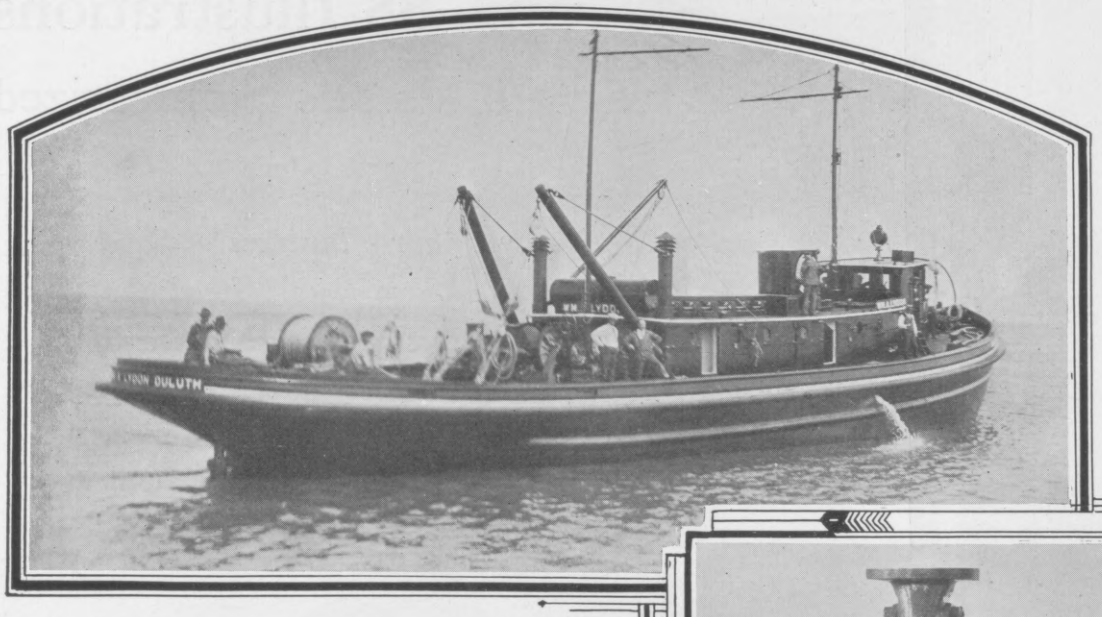
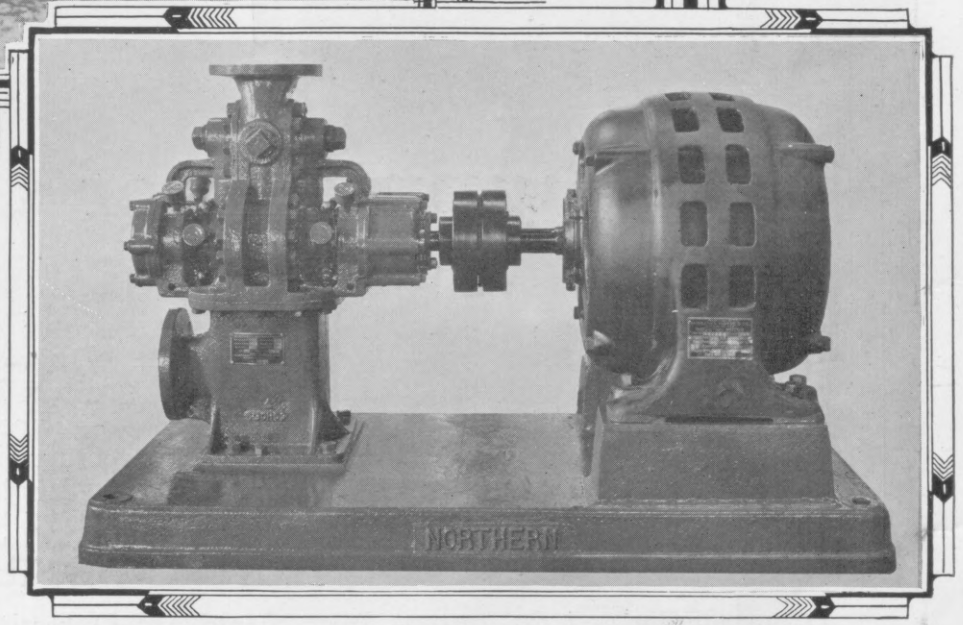
NORTHERN PUMPS

for All Diesel-Driven Vessels



NORTHERN ROTARY PUMPS
"MORE GALLONS PER HORSE POWER"



LUBRICATING Oil Pump installation in the 750 b.h.p. tug "Wm. A. Lyndon," owned by the Great Lakes Dredge & Dock Co. of Chicago, and powered with the new model Fairbanks, Morse Diesel engine. Fairbanks, Morse have standardized on Northern Pumps, for handling lubricating oil on their large marine and stationary engines.

150 G.P.M AGAINST 50 LBS. AT 850 R.P.M.

NORTHERN ROTARY PUMPS ARE RELIABLE

Bilge, Fire, Sanitary, Fresh Water, Fuel and Lubricating Oil Transfer Duties on Tugs, Tankers, Freighters, Ferries, Yachts, etc.

NORTHERN PUMP Co.

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MINNEAPOLIS, MINNESOTA, U. S. A.

Representatives in:—NEW YORK, CLEVELAND, DETROIT, CHICAGO, NEW ORLEANS, HOUSTON, SAN FRANCISCO, LOS ANGELES, SEATTLE, BOSTON, PITTSBURGH, ST. LOUIS, BUFFALO

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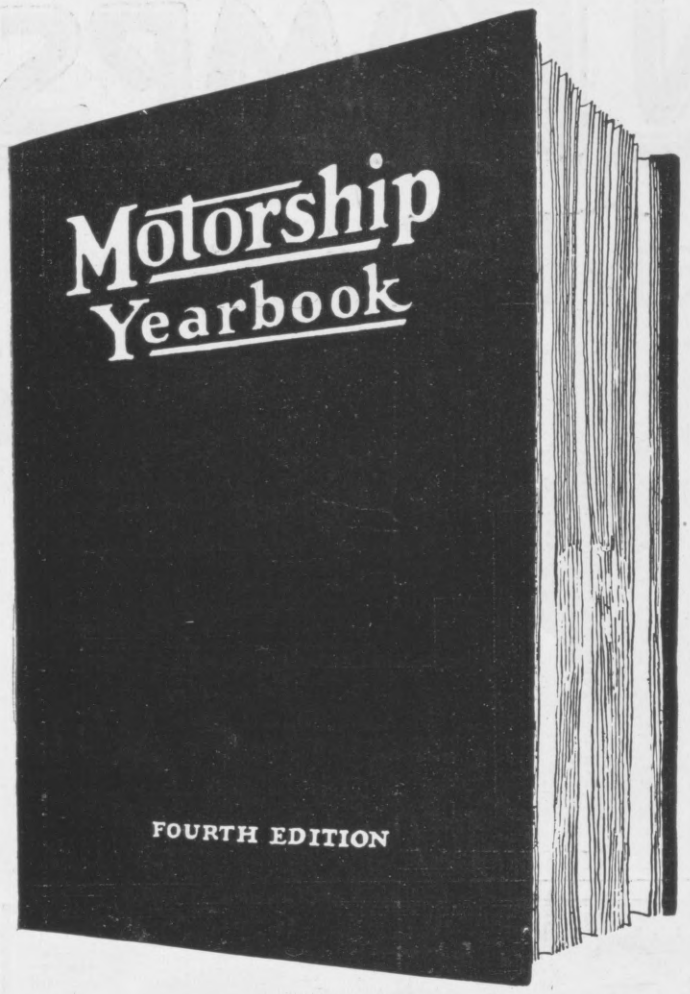

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Progress in Engine Design—Direct and Indirect Drive—Types of Marine Oil Engines—Types of Cooling Systems—Producing a Quiet Exhaust—Supercharging for Engines—Engine Room Auxiliaries.

Their Operation

Construction and Operation—Instruments Aid Operation—Centrifuging Engine Oils—Oiling of Diesel Engines—Federal Oil Specifications—Specific and A.P.I. Gravities with Equivalent Weights and Measures—Viscosity Conversion Table—Oil Bunkering Stations—Radio Beacon Stations—Beaufort Wind Scale—Equivalents of Feet and Inches in Meters.

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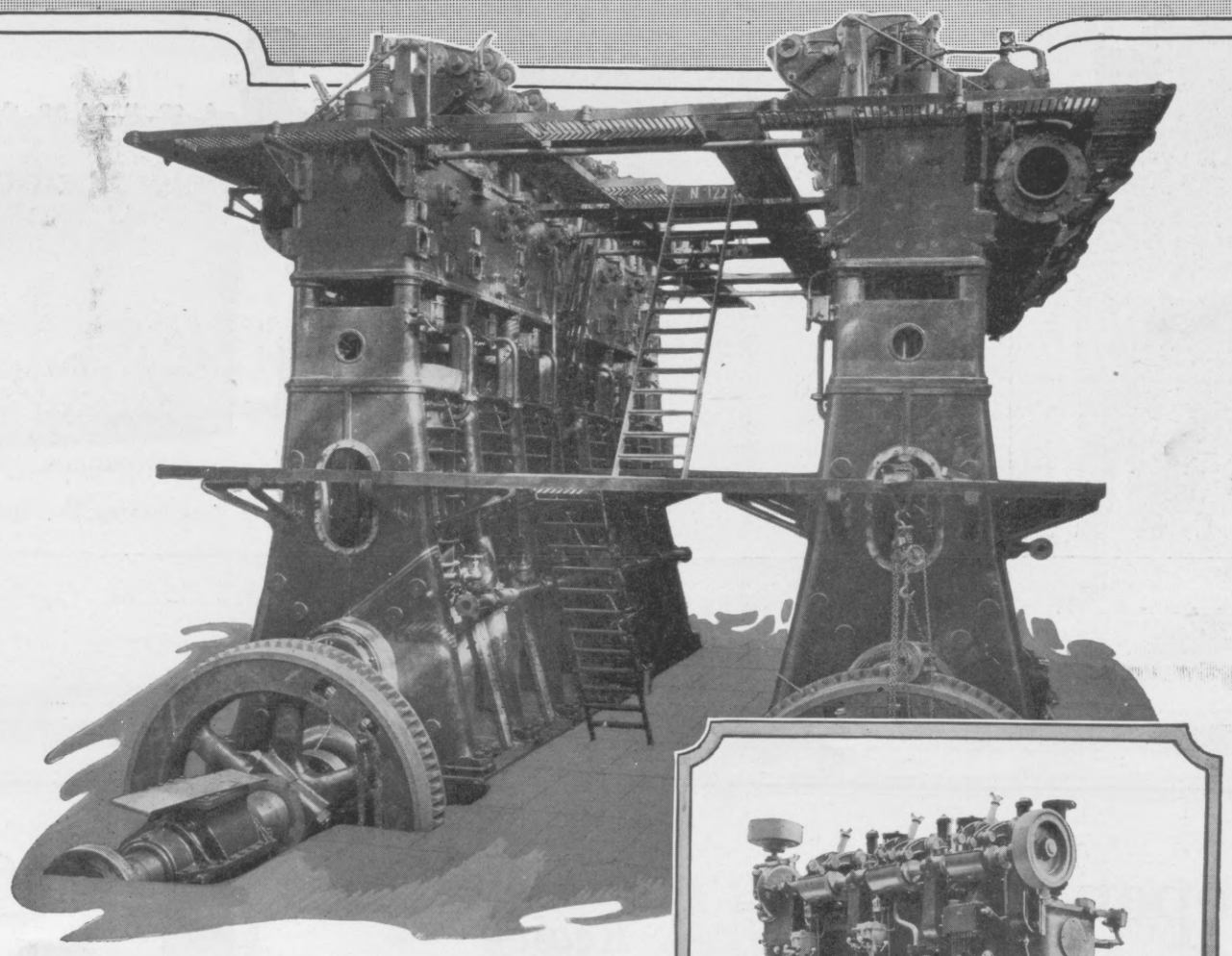
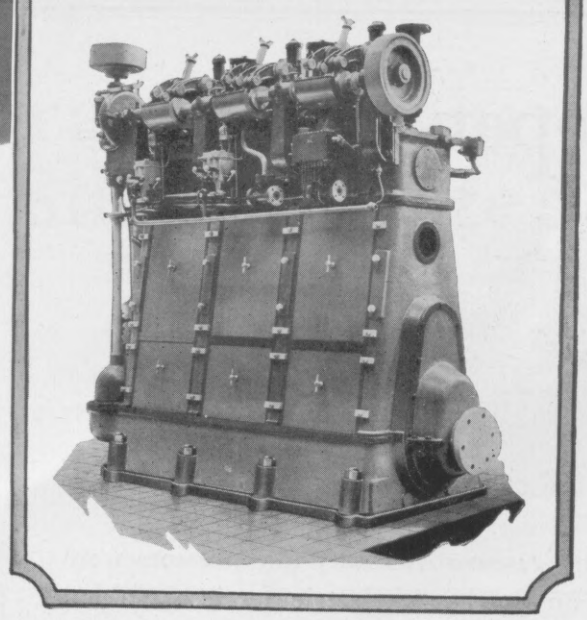
Werkspoor Design





WERKSPOOR DESIGN.—Good design based on sound engineering principles is an essential factor of a reliable oil engine. This practice has characterized the Werkspoor Diesel engine since its inception twenty years ago, and is embodied in all present-day models; viz.,—double-acting and single-acting four-cycle main-drive engines, auxiliary units and stationary sets.

Strict adherence to this policy—both as to design and manufacture—has given the Werkspoor engine a leadership in the industry. Such salient points of design as the cylinder beam, mushroom-type cylinders, off-set fuel valves, steel tie-rod construction and piston-dismounting arrangement are outstanding engineering achievements since adopted by many prominent engineering companies.

Some of the Werkspoor characteristics are clearly portrayed in the accompanying illustrations of a 4,250 i.h.p. main-drive Diesel set and an auxiliary unit of 100 b.h.p.

WILLIAM BRAAT
Representative for U. S. and Canada
Evening Post Bldg., 75 West St., New York

AMERICAN LICENSEES
American Brown Boveri Elec. Corp.
(Formerly New York Shipbuilding Corporation)
Pacific Diesel Engine Company

Werkspoor Amsterdam

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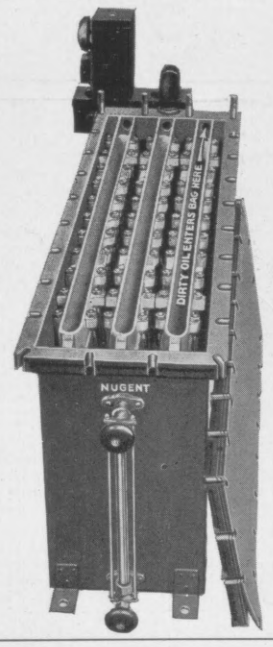

HAVE NO EQUAL FOR SHIP'S WORK

Under All Operating Conditions

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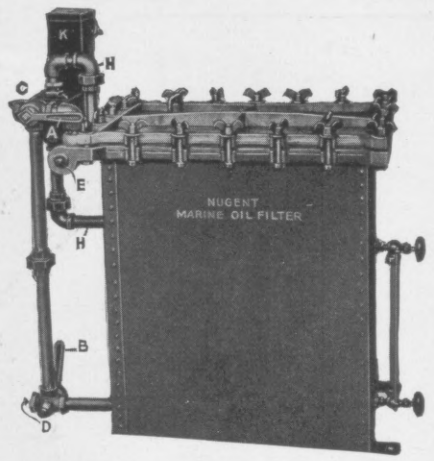

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Darling Bros., 120 Prince St., Montreal, Canada

Dependability—

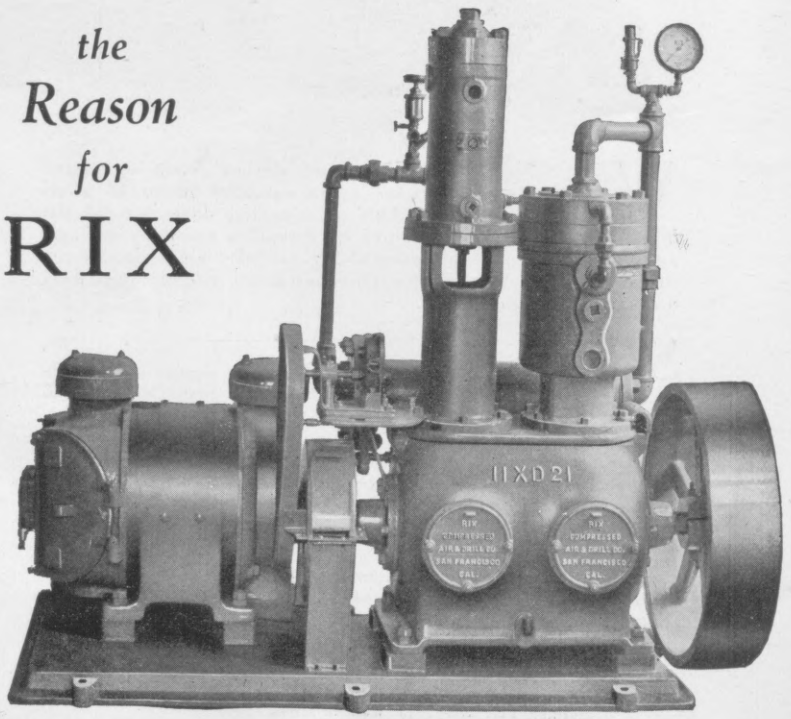
RIX High Pressure Auxiliary Compressors were installed on the Diesel-electric ferries "Golden Gate" and "Golden West" four years ago.

Proven reliability of these RIX units results now in another installation for the new ferry "Golden State," recently commissioned by the Golden Gate Ferry Company.

RIX Compressors are Standard Units for the majority of American Diesel Engine Builders. Among the notable users are McIntosh & Seymour and the New London Ship & Engine Co. RIX units are giving supreme service on various U. S. Government Dredges.

the Reason for

RIX



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on All Shipping Board Conversions Chosen for Reliability Efficiency Economy

FOR the all important details of lubricating oil service and fuel oil transfer, Kinney pumps were chosen for their outstanding characteristics.

With a reliable lubricating oil service the operation of a main engine can never fail. Reliability, coupled with efficiency and accuracy, is the keynote to design.

That's why Kinney pumps are fitted to MS. Tampa and her prototypes.

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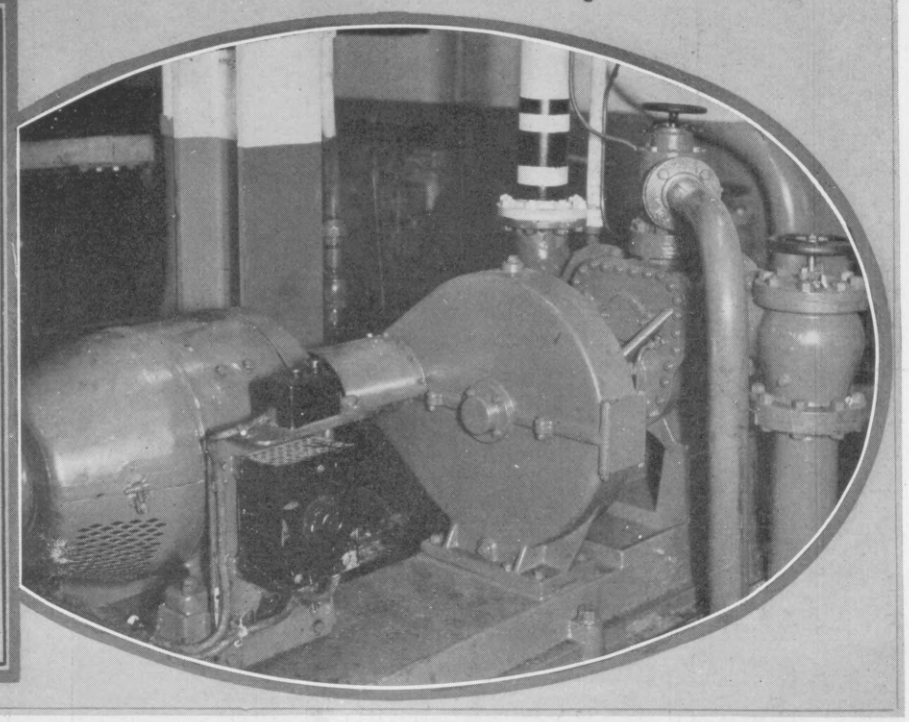

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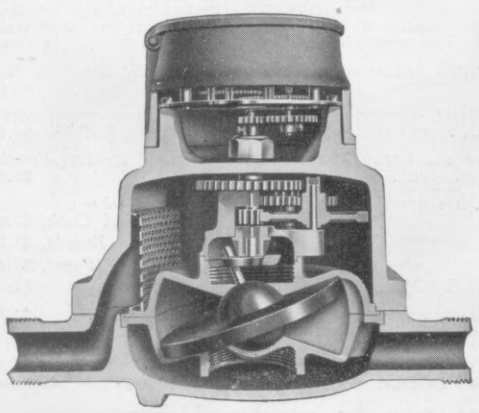
Niagara Meters



for all Motor vessels

THE sectional cut shows the unequalled simplicity of Niagara Meters. There are only five moving parts, and the course of the oil tends to wash sediment out of the meter. Damage to the meter will not cut off the supply to the engine. The dial reads in gallons or litres as desired.

THE old days of the dip rod and "approximate" fuel consumption are gone. The modern motor vessel owner demands accurate records of engine performance, yet there is no need for elaborate and expensive measuring instruments to secure this information.

A Niagara Oil Meter between the supply tank and each Diesel Engine will give an accurate reliable consumption record at all times. Another larger meter between the supply tank and the inlet will check supplies of fuel oil taken aboard. The installation is surprisingly easy, and meters require almost no care.

Full information and prices are given by the illustrated catalog which we will mail on request.

BUFFALO METER CO.
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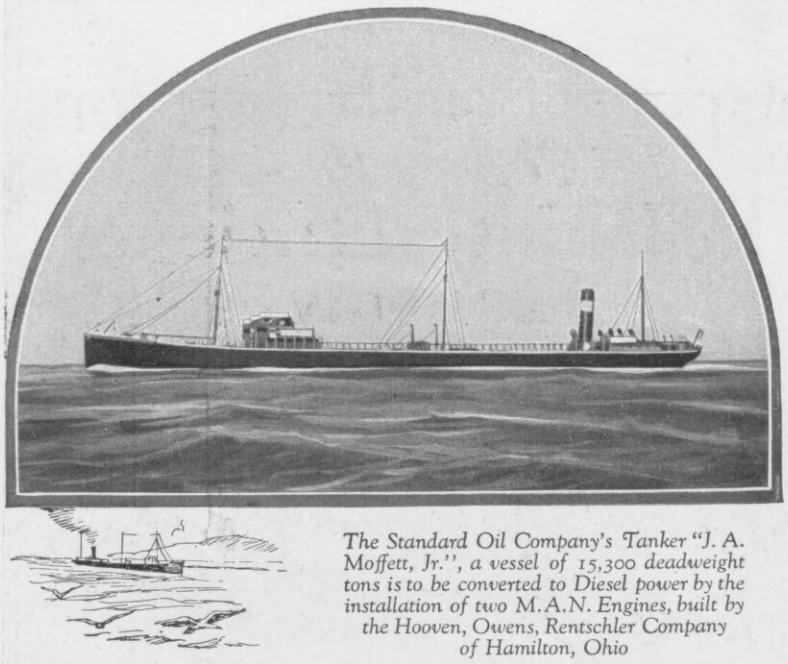

The Standard Oil Company's Tanker "J. A. Moffett, Jr.", a vessel of 15,300 deadweight tons is to be converted to Diesel power by the installation of two M.A.N. Engines, built by the Hooven, Owens, Rentschler Company of Hamilton, Ohio

The Conversion of the Standard Oil Company's Tanker "J. A. Moffett, Jr."

from steam to Diesel drive is to be carried out at the Tietjen and Lang plant of this Organization in Hoboken, N. J.

The very complete facilities of this Yard for conversion work and engine installation are unsurpassed on the Atlantic coast.

Performance and delivery are assured through the wide experience of this Organization in important marine work for many years.

PLANTS

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Experience and knowledge of special Diesel requirements have enabled us to produce a babbitt without equal in anti-friction and wearing qualities.

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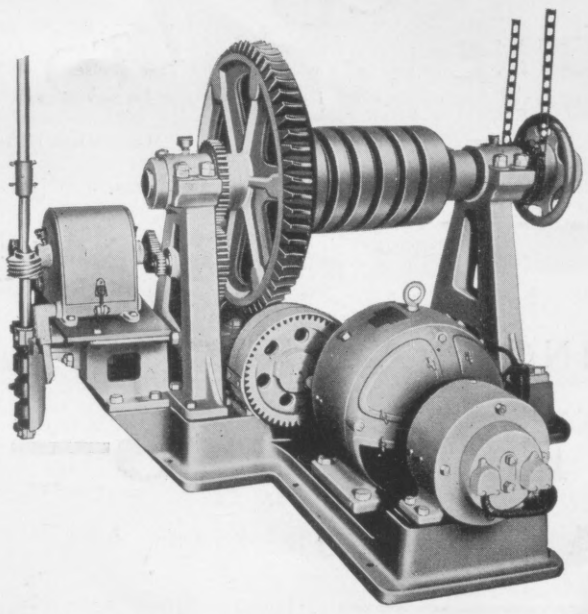

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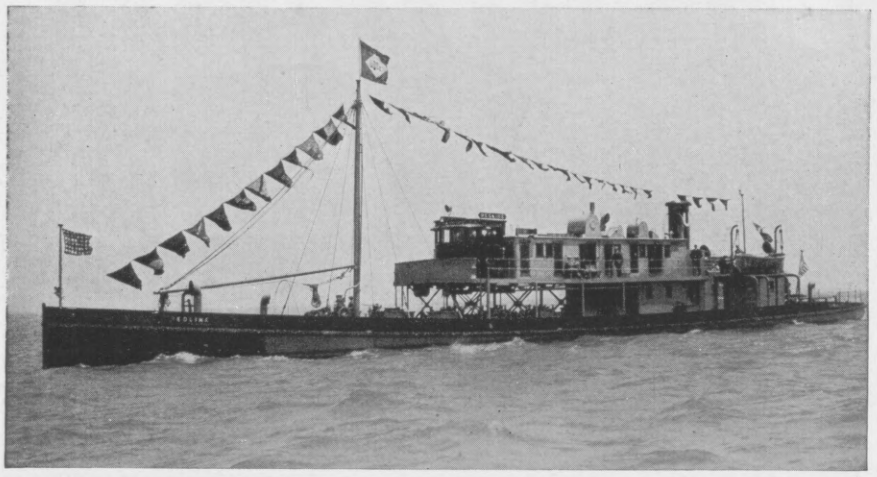

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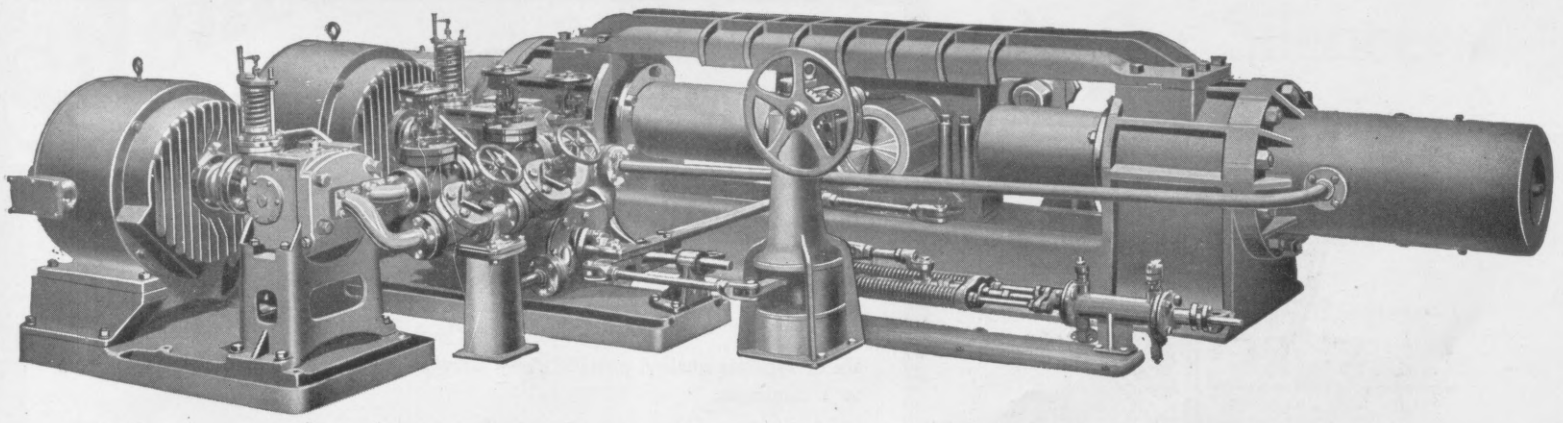

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HYDE Manganese Bronze Propellers, solid and built-up from 8 inches to 20 feet in diameter.

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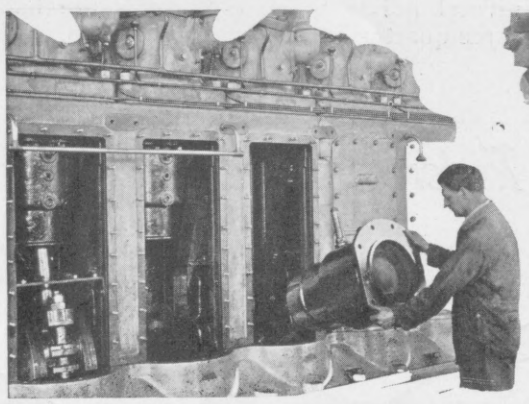

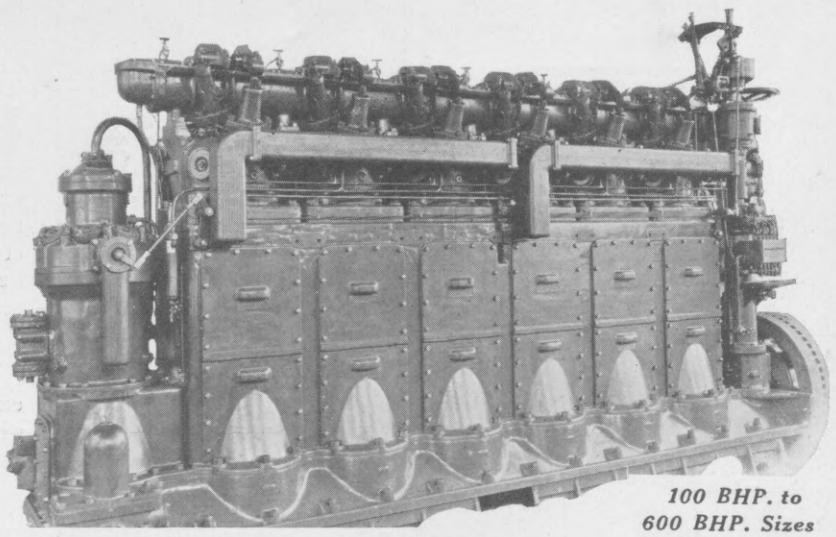

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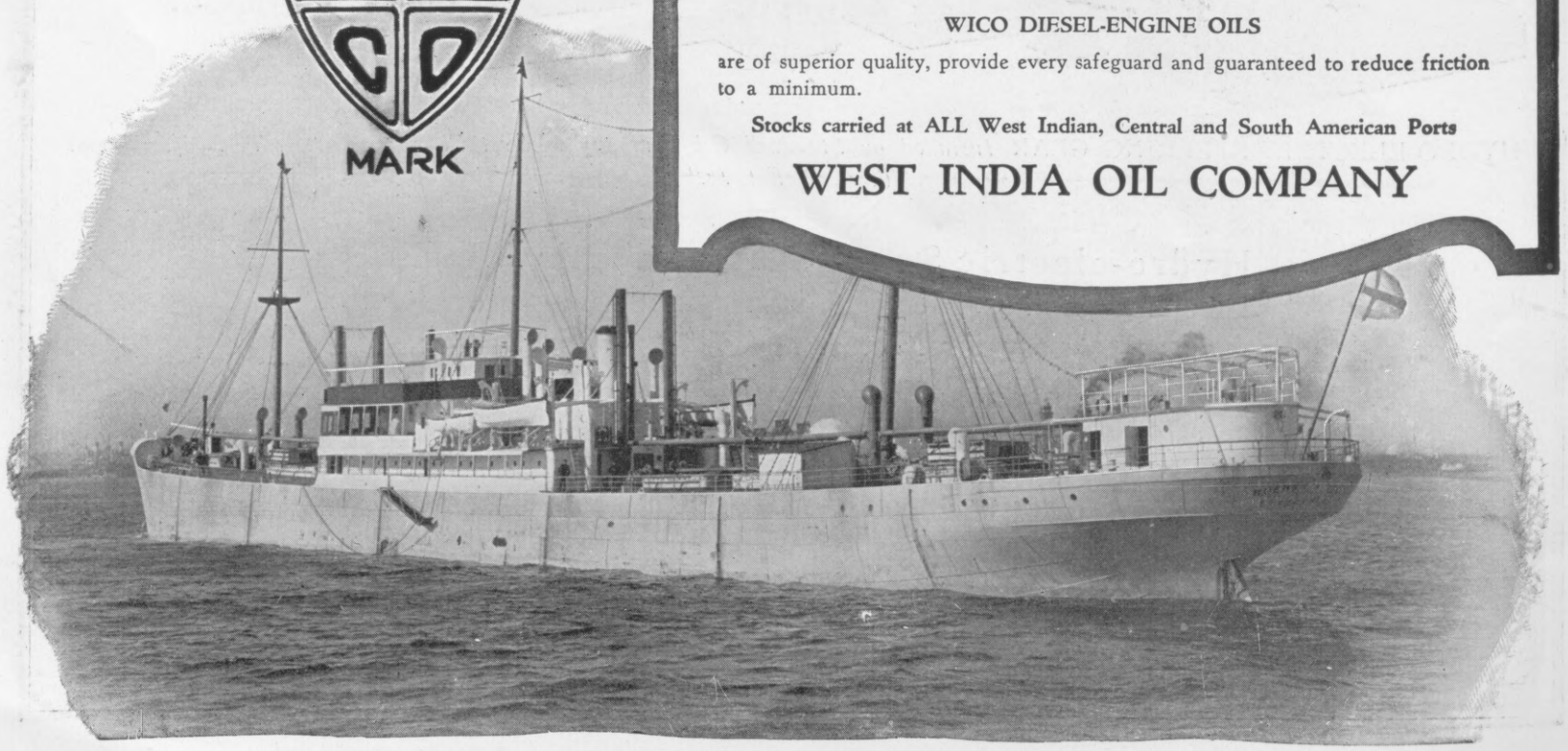

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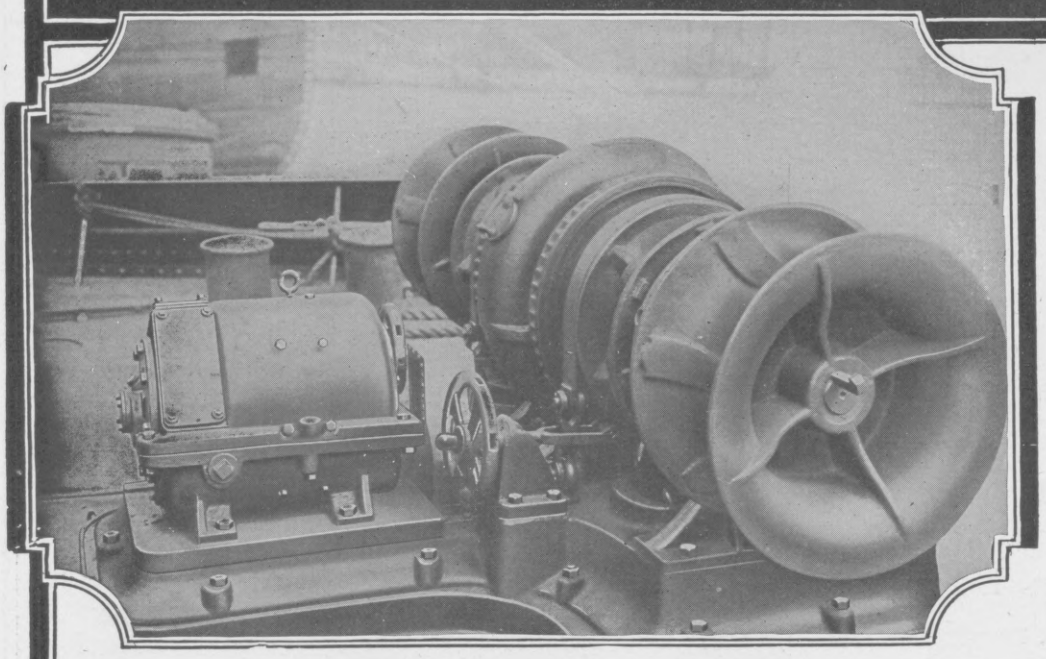

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Make Note Of the Silencers On the Tampa

Copyright—Motorship

They're what quieten those Diesels

THE main engine—a 2900 S.H.P. Worthington—exhausts through a 30" Maxim Silencer.

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For oil and gas engines, air compressors, uniflow steam engines, positive pressure blowers, reducing and safety valves and other equipment having noisy intakes or exhausts.

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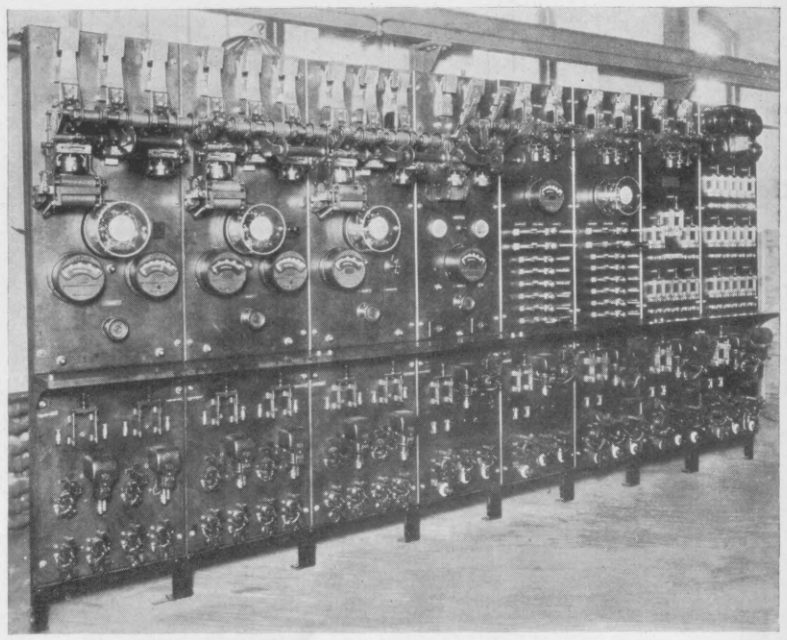

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THE factor of economy which leads to the DIESELIZING of large ships, urges as strongly the careful consideration of how to Dieselize most economically. For this result, the facilities of this shipyard are unsurpassed in America. Our great dry docks can be used for a complete ship overhauling and refitting at the same time.

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The first all-American Diesel Engine to go to sea

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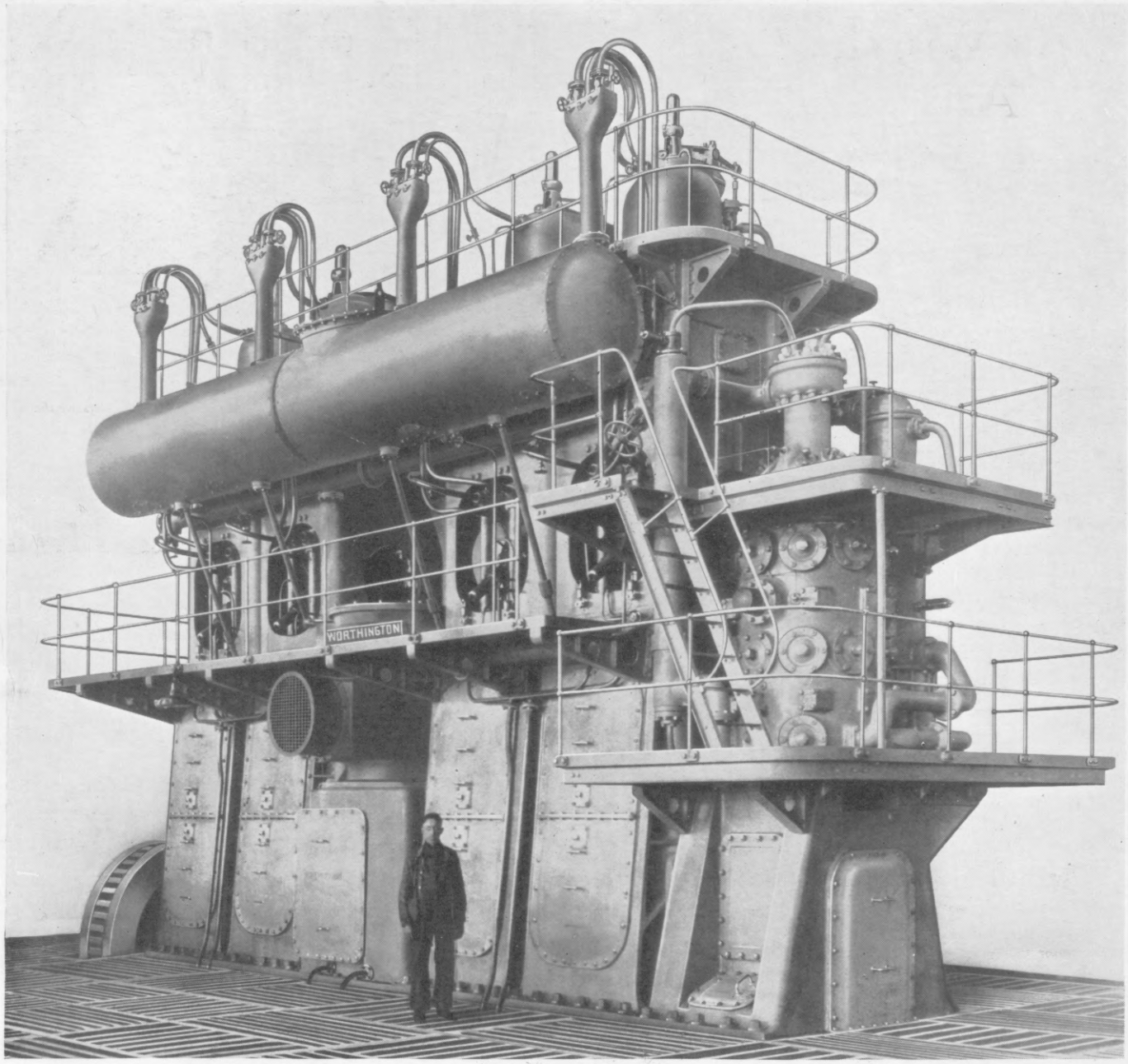
WORTHINGTON



WORTHINGTON writes a new page in Marine history as the Motorship "Tampa" completes her sea trial without a single adverse happening and is placed immediately in commission, sailing to Savannah for a cargo of cotton which she will carry across the Atlantic.

Among the one hundred and thirty guests of the United States Shipping Board there were many eminent marine experts, and there was evident among them a general satisfaction with the engine's performance. They were particularly pleased with the simplicity of its construction, the absence of vibration and the relative small size, weight and space occupied. The ease of maneuvering is perhaps the most outstanding and spectacular characteristic, as this engine can be thrown from ahead to astern with less effort and quicker action than a steam engine.

The new Worthington engine is compact, simple, and repeated endurance runs have proven it to be trouble-free. No ship builder can afford to overlook the Worthington double-acting Diesel engine when Diesel engines are under consideration.

In this issue will be found a descriptive article by O. E. Jorgenson, Worthington Consulting Marine Engineer. A bulletin giving specifications and construction details is now on the press and will be sent to any who ask for it.

Oil and Gas Engines *Pumps* *Condensers* *Compressors*
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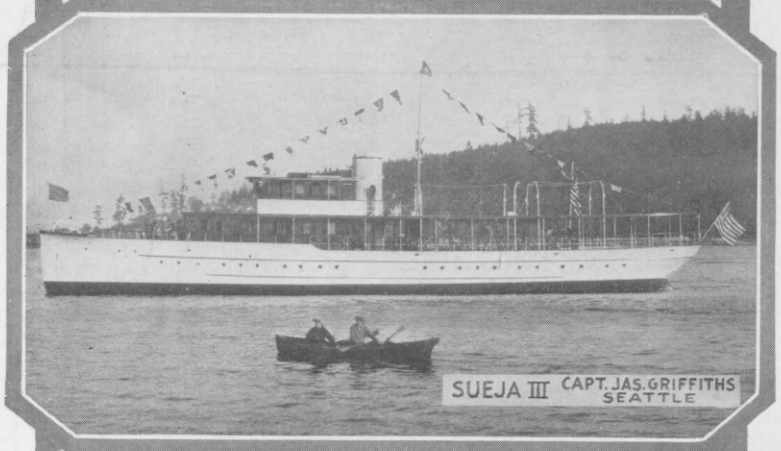
An Engine That Is Worthy Of Any Craft



FOR pleasure craft or work boat the smooth, trouble free operation of the Washington Estep Diesel Engine delivers a power that satisfies.

The re-orders from companies that have already installed one or more of these reliable, economical engines are strong proof of the kind of service they give

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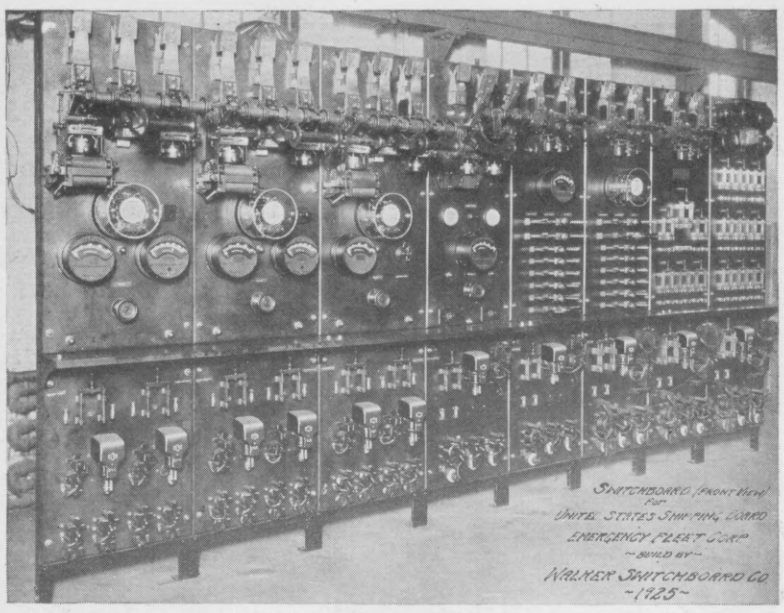
W. H. Worden Co., San Francisco, Los Angeles
British Columbia Representatives: Vancouver Machinery Depot, Ltd., Vancouver, B. C., Canada.

"WASHINGTON ESTEP" DIESEL ENGINES



In the switchboard assembly above the C-H Controllers are shown at the bottom of the panels

146 C-H Controllers for 14 U.S. Shipping Board Vessels

IT IS significant of the position held by Cutler-Hammer Motor Control—that for the first 14 motorships rebuilt by the U. S. Shipping Board, C-H Controllers (146 of them) were selected for the motor-driven auxiliaries.

The experience of Cutler-Hammer engineers dating back 30 years, has been applied to the design of motor control equipment for Marine Installation.

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The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
1250 St. Paul Avenue
MILWAUKEE, WISCONSIN

CUTLER C-H HAMMER
Electrical Control for Marine Service

C-H Controllers for U. S. Shipping Board Vessels before installation

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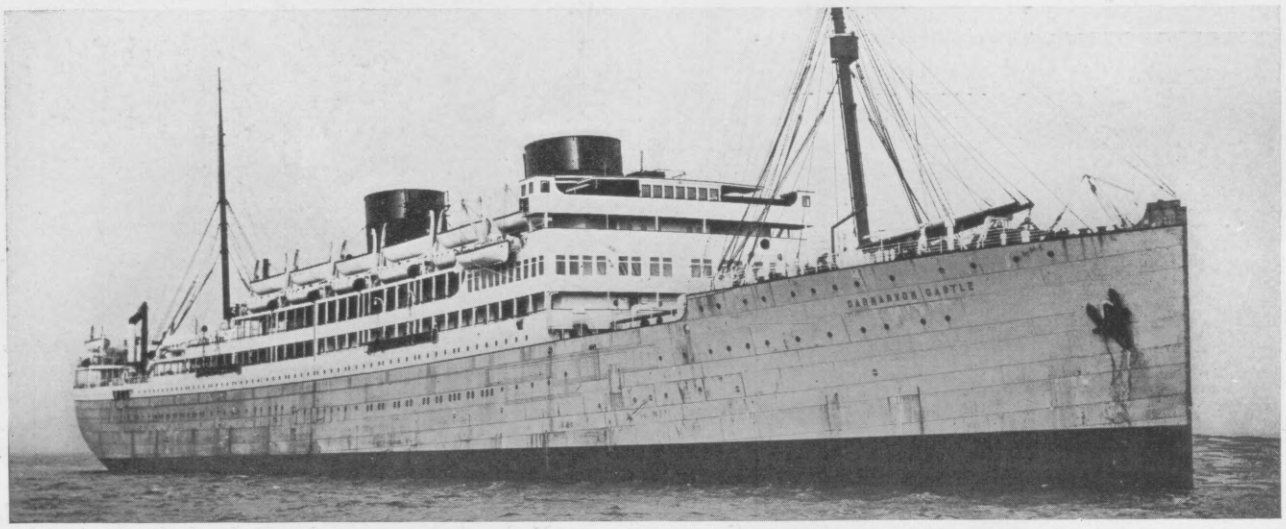

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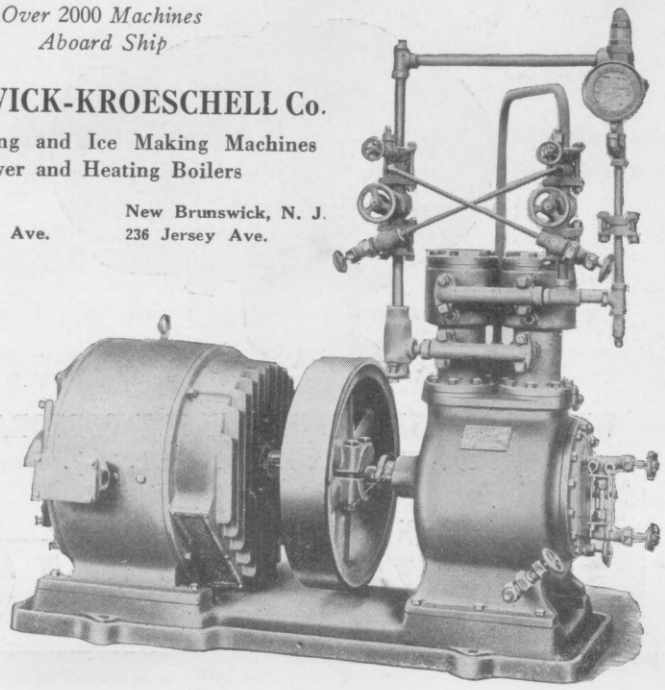

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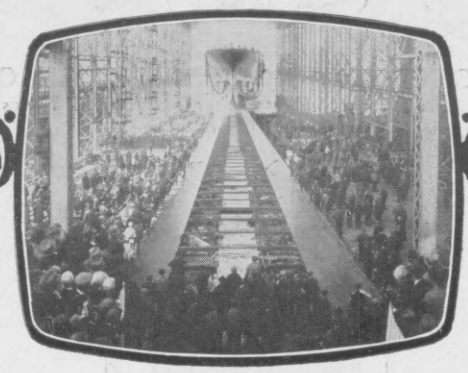

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The Naval Architect in charge states—

"PARAGON LAUNCHING STEARINE *worked admirably.*"

Of equal merit—

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CYLINDER *and* BEARING OILS

GEARED TURBINE OILS

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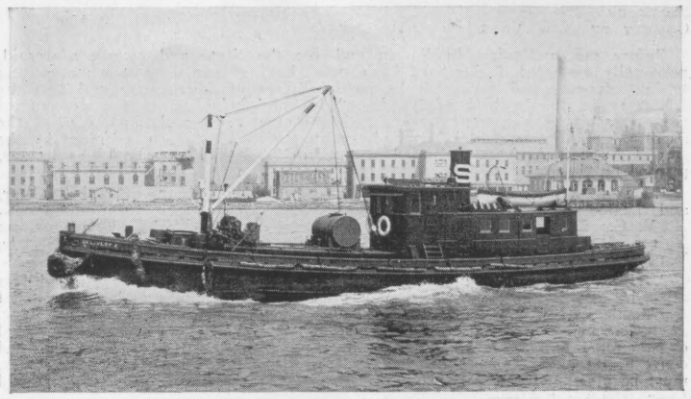
17 BATTERY PLACE, NEW YORK

STANDARD OIL ENGINE FULL DIESEL



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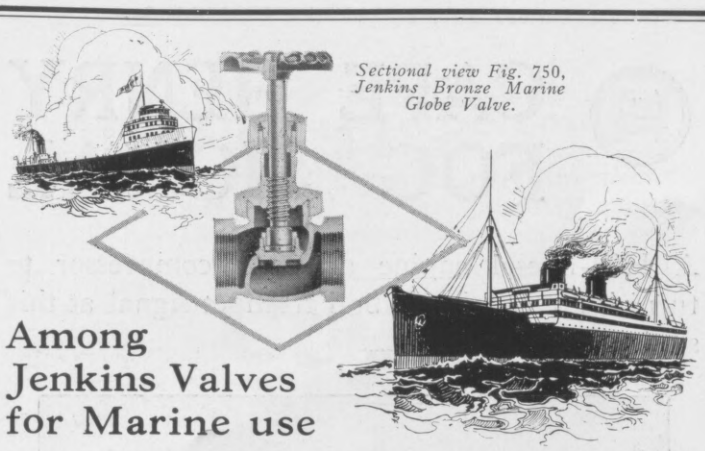

Sectional view Fig. 750, Jenkins Bronze Marine Globe Valve.

Among Jenkins Valves for Marine use

Shown in sectional view above is the Jenkins Marine Globe Valve for 225 pounds working steam pressure. It is a regrinding union bonnet valve with radial face disc, an assurance of leak-proof contact when the valve is closed.

Note the uniform and ample distribution of metal throughout the valve; the powerfully threaded spindle of manganese bronze, and packing.

This valve is but one of a number of Jenkins Valves used aboard ship and for marine work. Our folder No. 100 illustrated many of these valves—send for it and fulfill your valve requirements with valves that have made a name for themselves, as contributing factors to low maintenance costs.

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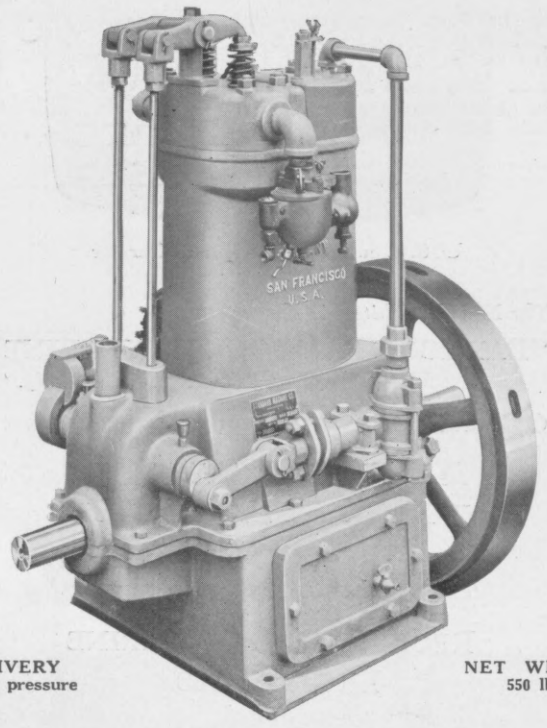

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300 lbs. pressure

NET WEIGHT
550 lbs.

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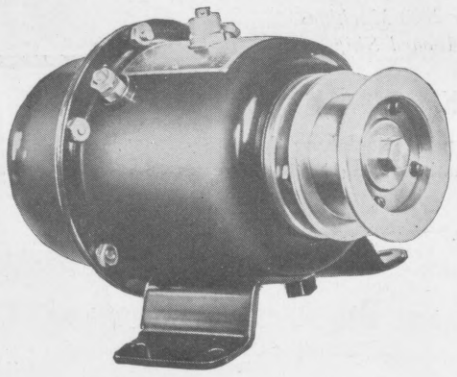

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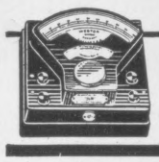

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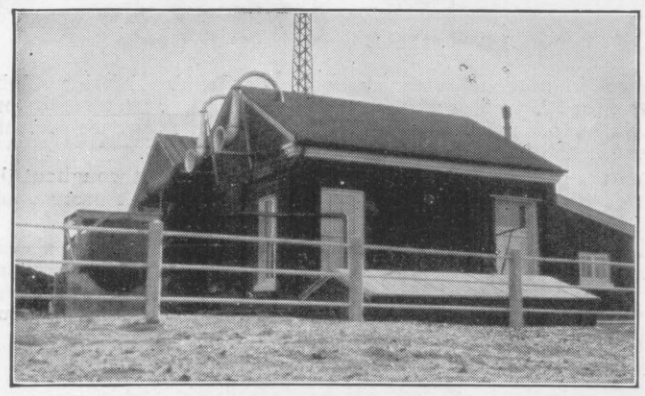
A Hill-Diesel engine drives a compressor to furnish air for the Daboll trumpet signal at this station.



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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF MOTORSHIP, PUBLISHED MONTHLY AT NEW YORK, N. Y., FOR OCT. 1, 1926.

State of New York }
County of New York } ss.

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared T. Orchard Lisle, who, having been duly sworn according to law, deposes and says that he is the Editor of Motorship and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Motorship, 220 West 42nd St., N. Y. C.; Editor, T. Orchard Lisle, 220 West 42nd St., N. Y. C.; Managing Editor, None; Business Manager, Russell Palmer, 71 Columbia St., Seattle, Wash.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Russel Palmer, 71 Columbia St., Seattle, Wash.; T. Orchard Lisle, 220 West 42nd St., N. Y. C.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each isue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications only.)

T. Orchard Lisle.
Editor.

Sworn to and subscribed before me this 21st day of Sept.. 1926.
[seal] Johanna E. Schult,
Notary Public Queens County, No. 2766.
Cert. filed in N. Y. Co. No. 1526, Reg. No. 8097.
Commission Expires March 30, 1928.

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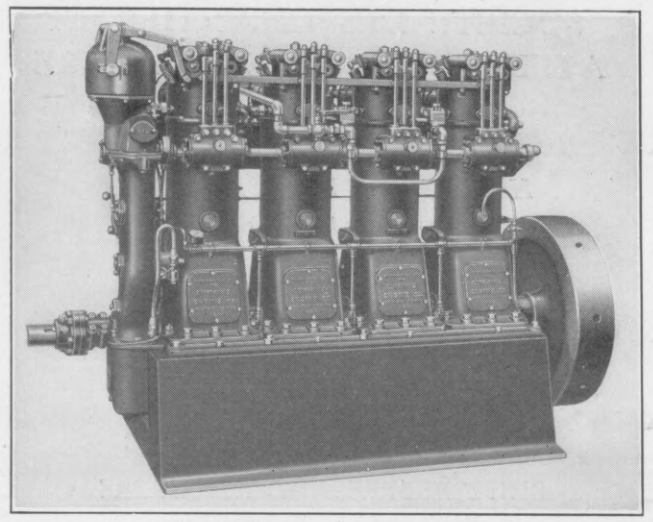

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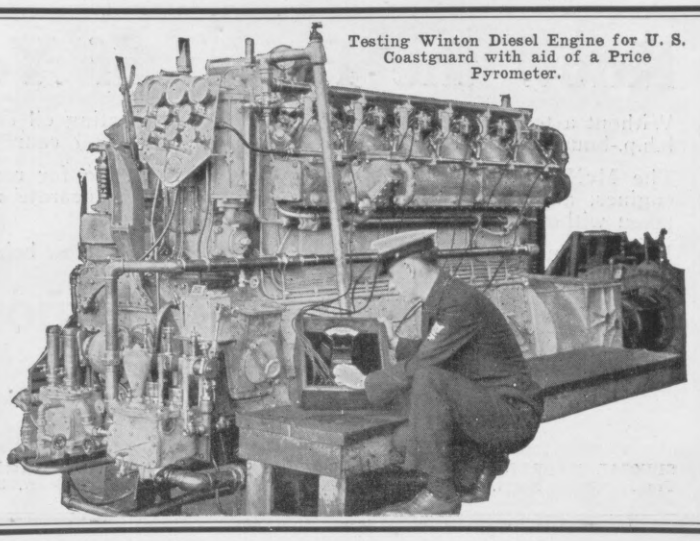

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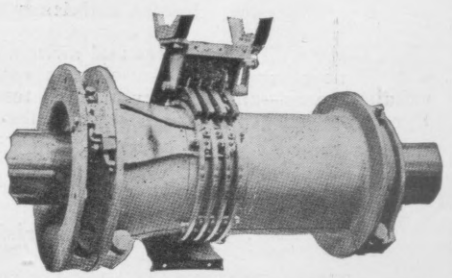

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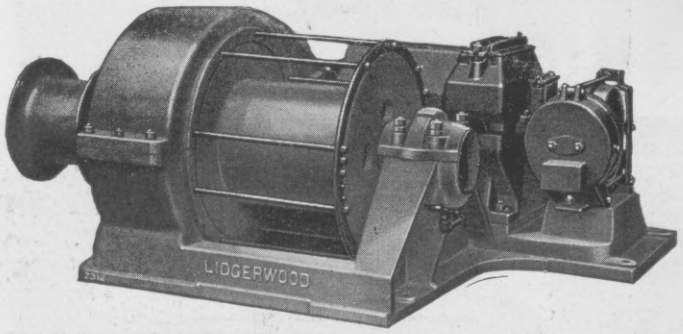

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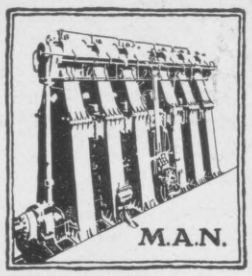

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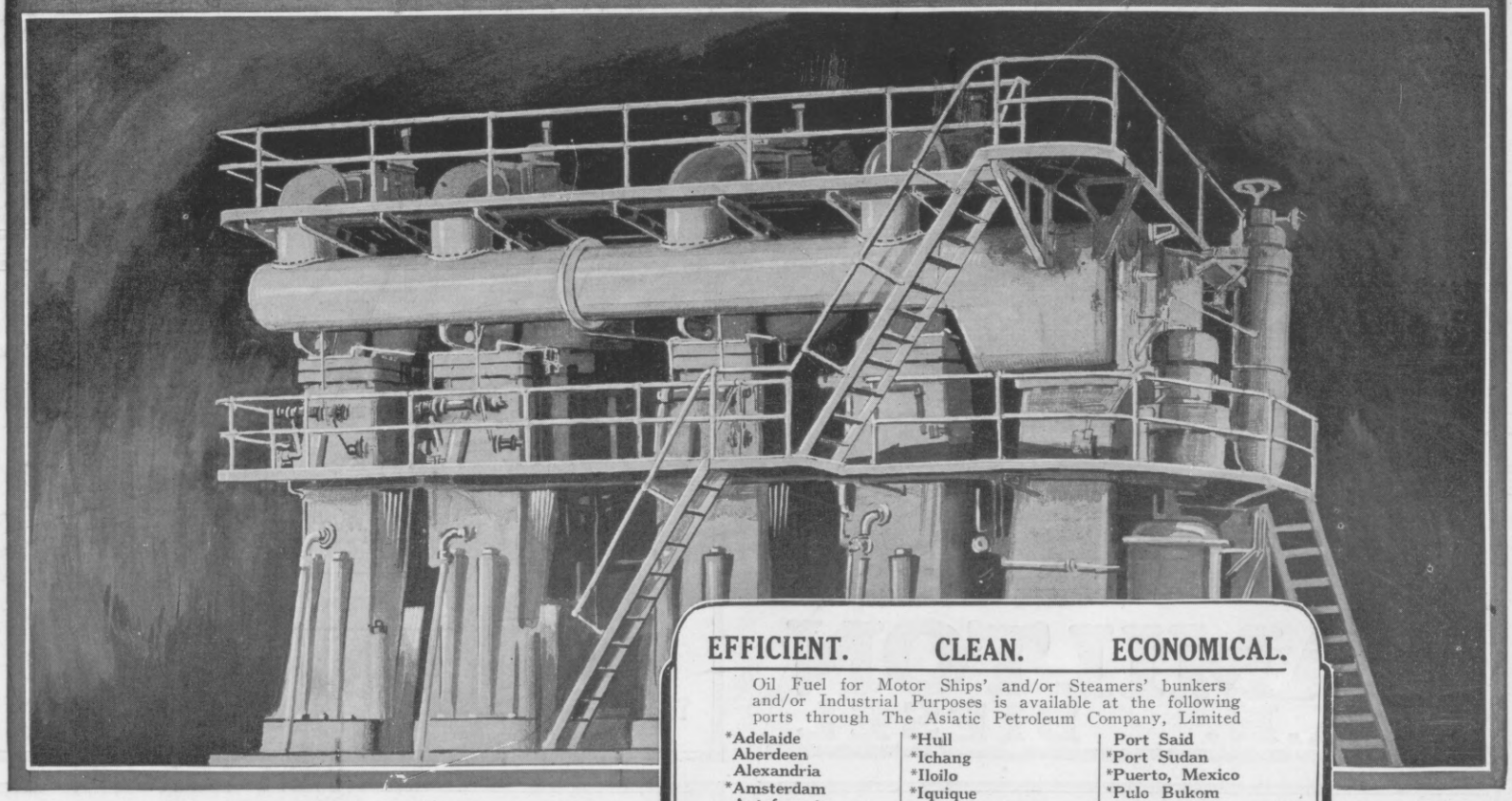

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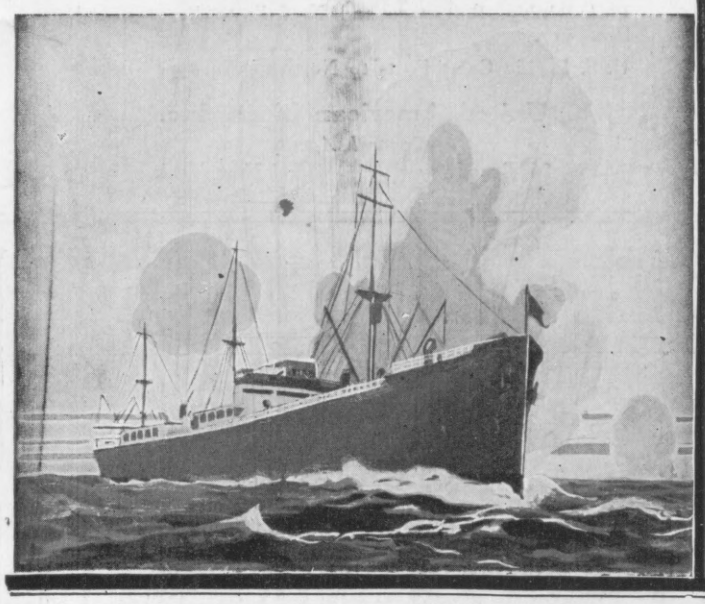

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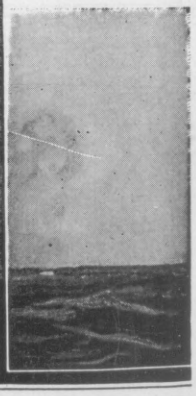

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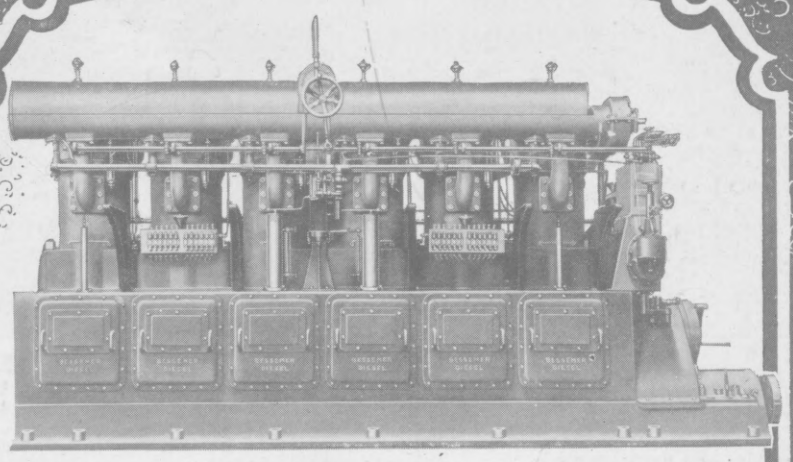

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